NATIONAL TALENT SEARCH EXAMINATION (NTSE-2021) STAGE -1

STATE : ASSAM PAPER : SAT

Date: 13/12/2020

Max. Marks: 100 **SOLUTIONS** **Time allowed: 120 mins**

1. The Regulating act legislation was passed by the British Parliament in -

(A) 1753 (B) 1763 (C) 1773 (D) 1783

Ans. (C)

Sol. The regulating act of 1773 was an act of the parliament of Great Britain intended to overhaul the management of the east India company's rule in India.

2. Under which Vicerory the Partition of Bengal took place ?

(A) Robert Clive (B) Lord Dalhousie (C) Lord Curzon (D) Lord Minto

Ans. (C)

Sol. The partition separated the largely Muslim Eastern areas from the largely Hindu Western areas on 16 October 1905 after being announced on 19 July 1905 by Lord Curzon.

3. Sepoy mutiny took place in -

(A) 1757 (B) 1765 (C) 1826 (D) 1857

Ans. (D)

Sol. Indian mutiny also called sepoy mutiny or first war of Independence, widespread but unsuccessful rebellion against British rule in India 1857-1859.

4. The capital of the province of "Eastern Bengal and Assam" was

(A) Shillong (B) Jorhat (C) Tinsukia (D) Dhaka

Ans. (D)

Sol. Eastern Bengal and Assam was an administrative sub-division(Province)of the British India between 1905 and 1912 headquartered in the City of Dacca .

5. Who was the first ICS from Assam ?

(A) Anandaram Borooah (B) Lakshminath Bezbaroa (C) Amulya Barua (D)Hem Barua

Ans. (A)

Sol. Anundoram Borooah was a great scholar in Sanskrit.He was the first civilian (ICS)from Assam.

6. The infamous Rowlatt Act was passed by the Imperial legislative Council in

(A) 1909 (B) 1919 (C) 1929 (D) 1939

Ans. (B)

Sol. The anarchial and revolutionary crimes act of 1919 popularly known as Rowlatt act was a legislative council act passed by the imperial legislative council in Delhi on 18 March 1919, indefinitely extending the emergency measures of preventive indefinite detention, incarceration without trial and judicial review.

7. Who wrote the famous Book "Gitanjali"?

(A) Rabindranath Thakur (B) Abanindranath Thakur

(C) Bipin Chandra Pal (D) Aurobindo Ghosh

Ans. (A)

Sol. Gitanjali is a collection of poems by the Bengali poet Rabindranath Tagore.

8. Who was the founder of Assam Association

(A) Manik Chandra Baruah (B) Nabin Chandra Bordoloi

(C) Anandaram Dhekiyal Phukan (D) Tarun Ram Phukan

Ans. (A)

Sol. in l903 Assam association was founded by Manik Chandra Barua .

9. In which year was the 'Gyan Pradavin? Sabha' founded '?

(A) 1827 (B) 1837 (C) 1847 (D) 1857

Ans. (D)

Sol. In 1857-59 Anandram Dhekial phukan established Gyan pradayini Sabha.He and other reformers would meet in Sabha to discuss social reformes and various other issues.

10. Who composed the 'Kirtan Ghosa"?

(A) Madhavdeva (B) Bhatadeva

(C) Ananta Kandali (D) Srimanta Sankardeva

Ans. (D)

Sol. The kirtan Ghoxa or kirtan Ghosha is a collection of the poetical works primarily composed by mediaval saint srimanta shankardev meant for community singing in the Eaksarna religion.

11. Which of the following is man-made resource

(A) Rivers (B) Mineral Oil

(C) Irrigation Canal (D) Forest

Ans. (C)

Sol. Irrigation is the process of applying controlled amounts of water to plants at needed intervals developed by mankind.

12. Which one of the following is abiotic resource

(A) Air (B) Plants (C) Animals (D) Fungus

Ans. (A)

Sol. Abiotic resources are non-living chemical and physical elements in the environment which affect individual organism as well as ecosy$tem,.ExampIe, air, water,soil etc.

13. Which of the following is non-renewable resource?

(A) Air (B) Water (C) Crops (D) Coal

Ans. (D)

Sol. A non-renewable resource (also called a finite resource) is natural resource that can't be readily replaced by natural means at a quick enough pace to keep up with consumption.For example, minerals,metals,ores, Fossil fuels(coal, petroleum, natural gas)etc.

14. The organization IUCN is under which of the following organizations ?

(A) UNESCO (B)UNO (C) WWF (D) UNEP

Ans. (C)

Sol. International Union for conservation of nature is involved in conservation of nature and promotion of sustainable use of resources.IT works with world wide fund for nature.

15. Baghjan is located in the district of

(A) Jorhat (B) Sibsagar (C) Dibrugarh (D) Tinsukia

Ans. (D)

Sol. The Baghjan oil field is located in Tinsukiya district in the state of Assam.on 27th may 2020 the blowout occurred at well no.5 in the Baghjan oil field.

16. Which is the smallest continent of the World?

(A) North America (B) Europe (C) Antarctica (D) Oceania

Ans. (D)

Sol. Oceania is geographic region that includes Australasia,Melanesia, Micronesia and Polynesia spanning Eastern and Western hemisphere.Oceania covers 10.18 million sq km area,which is smallest of all continents.

17. Which sea has separated the continents of Asia and Africa?

(A) Mediterrancean Sea (B) Red Sea (C) Caspian Sea (D) Arabian Sea

Ans. (B)

Sol. The Red sea is sea water inlet of the Indian ocean lying between Africa and Asia.

18. What has naturally separated Asia from Europe

(A) Ural mountain range (B) Caucasus mountain (C) Caspian Sea (D) Volga River

Ans. (A)

Sol. Solution-The Ural mountains or simply the Urals are a mountain range that runs approximately from North to South through Western Russia from the coast of Arctic ocean to the river Ural and northwestern Kazakhstan/The mountain range forms part of conventional boundary between the continents of The Europe and Asia.

19. Which is the largest agro-based industry of Assam?

(A) Silk industry (B) Rubber industry (C) Tea industry (D) Fishery

Ans. (C)

Sol. Tea industry is largest agro- based industry in Assam.lt generates huge income for Assam and India.

20. The industries of Assam can be classified

(A) Two types (B) Three types (C) Four types (D) Five types

Ans. (A)

Sol. Assam has mainly two types of industries-tea industry and petroleum industry.

21. The Constituent Assembly met for the first time in New Delhi on 9th December

(A) 1945 (B) 1946 (C) 1947 (D) 1948

Ans. (B)

Sol. The constituent assembly met first time on 9th December 1946 and it's last session was held on 24th January 1950.

22. Which article of the Indian Constitution declares India as "Union of States"?

(A) Article 1 (B) Article 2 (C) Article 3 (D) Article 4

Ans. (A)

Sol. Article 1 in the Constitution states that India, that is Bharat, shall be a union of states.

23. Which of the following is not a part of the Indian Parliament?

(A) President (B) Lok Sabha (C) Rajya Sabha (D) Supreme Court

Ans. (D)

Sol. Parliament consists of LokSabha; Rajya Sabha and president.

24. Who is the Chairperson of NITI AAYOG?

(A) President (B) Vice President (C) Prime Minister (D) Finance Minister

Ans. (C)

Sol. The governing council of NITI ayog with prime minister as it's chairman, comprises chief ministers of all states and Lt.governors of union territories.

25. Who was the first president of Independent India?

(A) Pandit Jawaharlal Nahru (B) Dr. Rajendra Prasad

(C) V.V. Giri (D) Dr. Zakir Hussain

Ans. (B)

Sol. Rajendra prasad was an Indian Independence activitstJawyer,scholar and subsequently,the first president of lndia,in office from 1950 to 1962.

26. Who appoints the Governor of a State in India ?

(A) The Chief Justice of the Supreme Court

(B) The President of India

(C) The Prime Minister of India

(D) The Chief Minister

Ans. (B)

Sol. The governor of state is appointed by president.He holds the office during the pleasure of president. (Article l55)

27. In which year was the Right to Education Act enacted in India?

(A) 2006 (B) 2007 (C) 2008 (D) 2009

Ans. (D)

Sol. The right of children to free and compulsory education act and right to education is an act of parliament of India enacted on 4th August 2009,

28. Sarkaria Commission was appointed in the year

(A) 1980 (B) 1981 (C) 1982 (D) 1983

Ans. (D)

Sol. Sarkariya commission was set up in 1983 by the central government of India.The sarkariya commission charter was to examine the central-state relationship on various portfolios and suggest changes within the framework of Constitution of India.

29. Which one of the following is the largest organ of UNO?

(A) Security Council (B) General Assembly

(C) The Economic and Social Council (D) Trusteeship Council

Ans. (B)

Sol. The United Nations General Assembly is one of the six principal organs of the United Nations serving as the main deliberative,policy making and representative organ of the UN.

30. National Human Rights Commission was created in the year

(A) 1990 (B) 1991 (C) 1992 (D) 1993

Ans. (D)

Sol. The National Human Rights Commission of India a statutory public body constituted on 12 October 1993 under the protection of Human Rights ordinance 28 September 1993.

31. Who is known as the Father of Economics ?

(A) Adam Smith (B) Chanakya (C) Marshall (D) None of the above

Ans. (A)

Sol. Adam Smith was a Scottish economist philosopher as well as a moral philosopher, a pioneer of political economy and a key figure during the Scottish Enlightenment,also known as “The father of Economies” or "The father of capitalism".

32. Which of the following is not a direct tax?

(A) Sales Tax (B) Income tax (C) Wealth Tax (D) Estate duty

Ans. (A)

Sol. Indirect tax can be defined as a type of tax where the incidence and impact of taxation does not fall on the same entity .It is collected by the government from an intermediary such as a retailer or manufacturer.
Example of indirect tax include, sales tax, entertainment tax,excise duty etc.

33. When was the Reserve Bank of India established?

(A) 1925 (B) 1935 (C) 1945 (D) 1955

Ans. (B)

Sol. The Reserve Bank of India was founded on 1 April 1935 to respond to economy troubles after the 1st world war. RBI was conceptualised as per the guidelines, working style and outlook presented by Dr.B.R.Ambedkar in his book titled "The problem of rupees -Its origin and it's solution " and presented to the Hilton young commission.

34. Which of the following is not a Cash Crop?

(A) Jute (B) Ground nut (C) Jowar (D) Sugarcane

Ans. (C)

Sol. Sorghum popularly known as jowar,is most important food and fodder crop of dry land agriculture. sorghum is fifth most important cereal crop in the world after wheat ,rice,maize and barley.

35. Planning Commission of India has been replaced by -

(A) Finance Commission (B) NITI Aayog

(C) GST Council (D) Monetary Policy Committee

Ans. (B)

Sol. Solution-The NITI Ayog is a policy think tank of Government of India , established with the aim to achieve sustainable development goals with cooperation federalism by fostering the involvement of state governments of India in the economic policy-making process using the bottom-up approach.

36. Goods and Services Tax is

(A) a direct tax (B) a central tax (C) a state tax (D) an indirect tax

Ans. (D)

Sol. Goods and services tax is an indirect tax used in India on the supply of goods and services. lt is comprehensive, multistage, destination-based tax: comprehensive because it has subsumed almost all the indirect taxes except a few state taxes.

37. Which of the following comes under Horticulture?

(A) Cotton (B) Jute (C) Fruits and Vegetable (D) Paddy

Ans. (C)

Sol. Horticulture is the branch of plant agriculture dealing with garden crops, generally fruits, vegetables and ornamental plants.

38. Which of the following does not belong to the Primary Sector?

(A) Forestry (B) Mining (C) Agriculture (D) Construction

Ans. (D)

Sol. Secondary sector includes : manufacturing and construction activities.

39. Which one of the following organizations estimates the National Income of India?

(A) National Income Committee (B) Central Statistical Organization

(C) Planning Commission (D) Reserve Bank of India

Ans. (B)

Sol. The central statistics office in the ministry of statistics and programme implementation is responsible the compilation of national accounts statistics (NAS)lt is also responsible for the compilation and publication of national income statistics

40. The first bank of India was the:

(A) State Bank of India (B) Bank of Hindustan (C) Bank of Calcutta (D) Reserve Bank of India

Ans. (B)

Sol. Bank of Hindostan(1770-1832) a now defuct bank is consider as among the first modern banks in colonial lndia.lt was established by the agency house of Alexander and company.

41. Which among the following is getting reduced in the following reaction ?

$Fe_2O_3 + 3CO \rightarrow 2\,Fe + 3CO_2$

(A) CO (B) Fe (C) CO_2 (D) Fe_2O_3

Ans. (D)

Sol. $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

Here Fe_2O_3 is getting reduced to Fe.

42. Exposure of Silver Chloride to Sunlight for a long duration turns grey due to -

(A) Formation of silver (B) Sublimation of silver chloride

(C) Evolution of Chlorine gas (D) Oxidation of silver chloride

Ans. (A)

Sol. $\underset{\text{silver chloride}}{AgCl(s)} \xrightarrow{\text{sunlight}} \underset{\text{silver(grey)}}{Ag(s)} + \frac{1}{2}Cl_2(g)$

43. A solution turns red litmus blue, its pH is likely to be

(A) 1 (B) 4 (C) 5 (D) 10

Ans. (D)

Sol. Bases turn red litmus blue. Bases have pH more than 7.

44. pH of rain water is.....than distilled water.

(A) More (B) Less (C) Cannotbecompaired (D) None of these

Ans. (B)

Sol. Rain water is acidic (pH less than 7) and distilled water is neutral (pH equal to 7)

45. The non metal which is a liquid at room temperature -

(A) Oxygen (B) Fluorine (C) Sulphur (D) Bromine

Ans. (D)

Sol. Fact :- Bromine is the only non metal which is liquid at room temperature.

46. An alloy is -

(A) An element (B) A mixture (C) An isomer (D) A metalloid

Ans. (B)

Sol. An alloy is a homogenous mixture of two or more metals.

47. The composition of aqua-regia is -

(A) Dil.HCl : Conc, HNO_3 - 3:1 (B) Conc.HCI: Dil HNO_3 - 3:1

(C) Conc.HCl : Conc. HNO_3 - 3:1 (D) Dil HCl : Dil HNO_3 - 3:1

Ans. (C)

Sol. Aqua regia is a mixture of concentrated HCl and concentrated HNO_3 in a ratio of 3 : 1 by volume.

48. Which of the following is not a Dobereiner triad?

(A) Li,Na,K (B) Mg,Ca,Sr (C) CI, Br, I (D) S,Se,Te

Ans. (B)

Sol. $$\frac{\text{Atomic mass of Mg + Atomic mass of Sr}}{2}$$

$$= \frac{24 + 88}{2}\text{amu}$$

$$= \frac{112}{2}\text{amu} = 56 \text{ amu, which is not equal to atomic mass of Ca that is 40 amu}$$

49. Newland gave the idea of reoccurence of properties of every -

(A) 7th (B) 8th (C) 6th (D) 4th

Ans. (B)

Sol. According to Newland's octave rule, there is reoccurence of properties of every 8^{th} element.

50. Which of the following element will form bivalent anion?

(A) Fluorine (B) Oxygen (C) Chlorine (D) Nitrogen

Ans. (B)

Sol. Oxygen is bivalent which has valency two $_8O \rightarrow 2,6$, it has $6e^-$ in valence shell and it requires $2e^-$ to fulfill its octet hence it is having valency 2 and it forms bivalent O^{-2} ion

51. An element with atomic number 19 will most likely combine with the element with atomic number

(A) 17 (B) 11

(C) 18 (D) 20

Ans. (A)

Sol. Atomic no. 19 $\rightarrow {}_{19}K \rightarrow 2,8,8,1$. It will combine with a non metal.

Atomic no. 17 $\rightarrow {}_{17}Cl \rightarrow 2,8,7$.

So potassium will combine with chlorine to form KCl.

52. Which of the following shows an electronic configuration of 2, 8, 4 ?

(A) Sodium (B)Silicon

(C) Sulphur (D) Aluminium

Ans. (B)

Sol. ${}_{14}Si \rightarrow 2,8,4$

53. Rutherford's experiment is related to the size of the -

(A) Nucleus (B) Atom

(C) Electron (D) Neutron

Ans. (A)

Sol. Rutherford's gold foil experiment is related to the size of atomic nucleus.

54. Which species does not contain neutron?

(A) H (B) Li^{2+}

(C) C (D) O

Ans. (A)

Sol. ${}^{1}_{1}H \rightarrow$ no. of proton = 1 no. of electrons = 1

no. of neutrons = 1 – 1 = 0

55. Elements with valency 1 are

(A) Always metals

(B) Always metalloids

(C) Either metal or Non-metal

(D) Always non-metals

Ans. (C)

Sol. Either metal or non-metal

Metals may have valency $\rightarrow$ 1. Eg. Na, K, Rb, etc.

Non metals may have valency $\rightarrow$ 1. Eg. F, Cl, Br, Etc.

56. Electronic configuration of an atom is 2,8,1. Which of the following elements is similar with it in chemical reactivity?

(A) K (B) CI

(C) N (D) Ar

Ans. (A)

Sol. Electronic configuration 2,8,1 is of sodium.

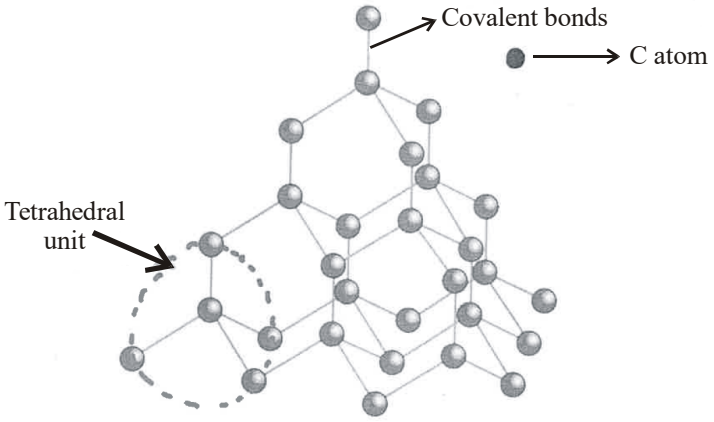
Potassium (K) and sodium (Na) both belong to same group and have similar chemical reactivity.

57. In diamond, the bonding between Carbon is -

(A) Coordinate (B) Ionic (C)Covalent (D) Electrostatic

Ans. (C)

Sol. Covalent bond is present between carbon atoms in diamond. Carbon atoms are present in the form of tetrahedral units.



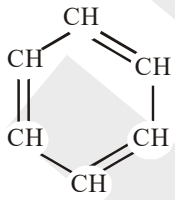
58. Which of the following is not a Saturated Hydrocarbon?

(A) Cyclohexane (B)Benzene (C) Butane (D) Isobutane

Ans. (B)

Sol. Benzene (C_6H_6) is an unsaturated compound.

Structure of benzene is :



59. Buckminster fullerene is an allotropic form of

(A) Phosphorus (B) Sulphur (C) Carbon (D) Tin

Ans. (C)

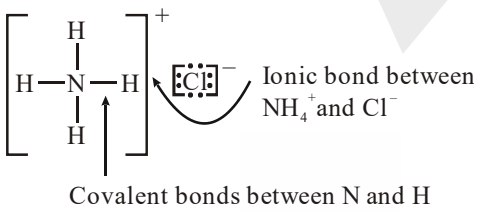
Sol. Buckminster fullerene (C_{60}) is an allotrope of carbon.

60. The compound containing both ionic and covalent bond is

(A) $AlCl_3$ (B) CaO (C) $MgCl_2$ (D)NH_4Cl

Ans. (D)

Sol. The bonding is NH_4Cl can be shown as :-



61. The LCM of two numbers is 1200. Which of the following canot be their HCF?

(A) 600 (B) 500 (C) 400 (D) 200

Ans. (B)

Sol. Let two numbers are a,b

and As given L.C.M. = 1200 of a,b

So as we know L.C.M. must include the values of H.C.F. of both terms.

Hence by option 500 not a factor of 1200

Hence its not the H.C.F. of a,b

62. The number of decimal places after which the decimal expansion of the rational number $\frac{14587}{1250}$ will terminate is

(A) 1 (B) 2 (C) 3 (D) 4

Ans. (D)

Sol. A rational number = $\frac{14587}{1250}$

$$\Rightarrow \frac{1458.7}{125} = \frac{1458.7}{5^3 \times 2^3} \times 2^3$$

$$= \frac{1458.7 \times 8}{1000} = 11.6696$$

Hence decimal place are after 4 digits.

63. The expression $(2+\sqrt{3})$ $(2-\sqrt{3})$ is

(A) a rational number (B) a natural number

(C) an integer (D) all the above

Ans. (D)

Sol. $\left(2+\sqrt{3}\right)\left(2-\sqrt{3}\right)$

$$= \left[2^2 - \left(\sqrt{3}\right)^2\right] = 4-3 = 1$$

Hence 1 is a rational number or natural number or an integer.

64. If the graph of the polynomial y = f(x) intersects the x - axis at two points then the number of zeros of f(x) is

(A) 0 (B) 3 (C) 1 (D) 2

Ans. (D)

Sol. If graph of y = f(x) intersect the x axis at 2 points then the number of zeros is 2.

65. If the sum of the zeros of the polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, then k = ?

(A) 2 (B) 4 (C) -2 (D) -4

Ans. (B)

Sol. Given sum of roots of polynomial = 6

Let roots of polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is α, β, γ

So by vieta theorem $\alpha + \beta + \gamma = \frac{-(-3k)}{2}$

$$6 = \frac{(3k)}{2}$$

$$\frac{12}{3} = k \qquad k = 4$$

66. If the system of equations $2x + 3y = 5$ and $4x + ky = 10$ has infinitely many solutions then k = ?

(A) 1 (B) $\frac{1}{2}$ (C) 3 (D) 6

Ans. (D)

Sol. For infinitely many solutions of two equations

$2x + 3y = 5$

$4x + ky = 10$

condition for infinite many solution $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \quad \Rightarrow \frac{2}{4} = \frac{3}{k} = \frac{5}{10}$

$$\Rightarrow \frac{3}{k} = \frac{1}{2} \Rightarrow k = 6$$

67. The area of the triangle formed by the lines y = x, x = 6 and y = 0 is

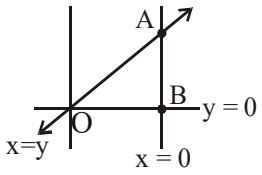
(A) 36 sq. units (B) 18 sq. units (C) 9 sq. units (D) 72 sq. units

Ans. (B)

Sol. As we given equation of lines i.e. x = y

x = 6

y = 0



On plot on graph.

So coordinate of A point (6,6)

Hence AB = 6

OB = 6

So Ar of $\Delta AOB = \frac{1}{2} \times 6 \times 6$

= 18 sq unit.

68. If x = 1 is a common root of the equation $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$ then the value of ab is

(A) 3 (B) 3.5 (C) 6 (D) -3

Ans. (A)

Sol. If x = 1 is factor of equations

$ax^2 + ax + 3 = 0$, $x^2 + x + b = 0$

so put x = 1 in above two equations.

$a + a + 3 = 0$ $1 + 1 + b = 0$

$2a = -3$ ....(i) $b = -2$ ....(ii)

So multiply both equation (1) & (2)

$2ab = 6$

$ab = 3$

69. The value of $\sqrt{6+\sqrt{6+\sqrt{6+.....}}}$ is

(A) 4 (B) 3 (C) -2 (D) 3.5

Ans. (B)

Sol. $\sqrt{6+\sqrt{6+\sqrt{6+.....}}} = x$ .....(i)

squaring both sides

$6+\sqrt{6+\sqrt{6+.....}} = x^2$

from equation (i)

$\Rightarrow 6 + x = x^2$

$\Rightarrow x^2 - x - 6 = 0$

$\Rightarrow x^2 - 3x + 2x - 6 = 0$

$\Rightarrow x(x - 3) + 2(x - 3) = 0$

$\Rightarrow (x - 3)(x + 2) = 0$

So x = 3

x = –2 neglect.

70. The first and last terms of an A.P. are 1 and 11. If the sum of its terms is 36 then the number of terms will be -

(A) 5 (B) 6 (C) 7 (D) 8

Ans. (B)

Sol. As we know

$$S_n = \frac{n}{2}(a+\ell)$$

$$36 = \frac{n}{2}(1+11)$$

$36 \times 2 = n \times 12$

$$\frac{36\times 2}{12} = x \qquad \Rightarrow x = 6$$

71. If 18, a, b, -3 are in A.P. then a + b = ?

(A) 19 (B) 7 (C) 11 (D) 15

Ans. (D)

Sol. 18, a, b, – 3 are in A.P.

So a – 18 = – 3 – b

a + b = –3 + 18

a + b = 15

72. Sides of two simmilar triangles are in the ratio 4 : 9. Area of these triangle are in the ratio.

(A) 2 : 3 (B) 4 : 9 (C) 81:16 (D) l6:81

Ans. (D)

Sol. As we know ratio of area of similar Δ's

$$\frac{\text{Ar } \Delta ABC}{\text{Ar } \Delta XYZ} = \frac{(\text{side AB})^2}{(\text{side XY})^2}$$

$$= \frac{(4)^2}{(9)^2} = \frac{16}{81}$$

73. If Δ ABC and ΔDEF are similar triangles such that $\angle A = 47°$ and $\angle E = 83°$ then $\angle F$ =?

(A) 50^0 (B) 60^0 (C) 70^0 (D) 80^0

Ans. (A)

Sol. As given $\Delta ABC \sim \Delta DEF$

$\Rightarrow \angle A = \angle D, \angle B = \angle E, \angle C = \angle F$

As given $\angle A = 47° = \angle D, \angle B = \angle E = 83°$

In ΔDEF $\angle D + \angle E + \angle F = 180°$

$47° + 83° + \angle F = 180°$

$\angle F = 180° - 130° = 50°$

74. The perimeter a triangle with vertices (0,4), (0,0) and (3, 0)

(A) $7 + \sqrt{5}$ (B) 6 (C) 7.5 (D) 12

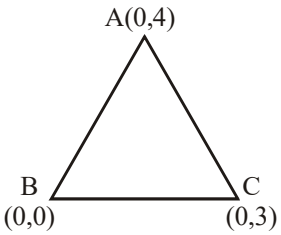
Ans. (D)

Sol. As given vertices of triangle

So sides of ΔABC is

AB = 4, BC = 3, AC = 5

So perimeter of it = 4 + 3 + 5 = 12



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75. The point on the x-axis which is equidistant from points (-1,0) and (5,0) is

(A) (0,2) (B) (2,0) (C) (3,0) (D) (0,3)

Ans. (B)

Sol. The point on x axis which is equidisstant from point (–1,0) and (5,0) are mid-point is $\left(\frac{-1+5}{2}, \frac{0+0}{2}\right)$ i.e. (2,0)

76. If $\sin\theta + \text{Sin}^2\,\theta = 1$ then $\text{Cos}^2\theta + \text{Cos}^4\theta = 1$

(A) -1 (B) 1 (C) 0 (D) 2

Ans. (B)

Sol. $\text{Sin}\,\theta + \sin^2\theta = 1$

$\Rightarrow \sin\theta = 1 - \sin^2\theta$

$\Rightarrow \sin\theta = \cos^2\theta$ ....(i)

So $\cos^2\theta + \cos^4\theta$

$\Rightarrow \cos^2\theta + (\cos^2\theta)^2$

$\Rightarrow \cos^2\theta + (\sin\theta)^2$ ($\because$ from (i))

$\Rightarrow \cos^2\theta + \sin^2\theta$

$\Rightarrow 1$

77. If $\text{Sec}\theta + \tan\theta = x$ then $\tan\theta$ = ?

(A) $\frac{x^2+1}{x}$ (B) $\frac{x^2-1}{x}$ (C) $\frac{x^2+1}{2x}$ (D) $\frac{x^2-1}{2x}$

Ans. (D)

Sol. $\sec\theta + \tan\theta = x$ ....(i)

so $\sec\theta - \tan\theta = \frac{1}{x}$ ....(ii)

on subtract (ii) from (i)

$\Rightarrow$ $\sec\theta + \tan\theta = x$

$\sec\theta - \tan\theta = \frac{1}{x}$

$(-) \quad (+) \quad (-)$

$2\tan\theta = x - \frac{1}{x}$

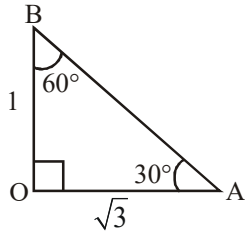
$\tan\theta = \frac{x^2-1}{2x}$

78. The ratio of the length of a rod and its shadon is $1:\sqrt{3}$. The angle of elevation of the Sun is

(A) 30^0 (B) 45^0 (C) 60^0 (D) 90^0

Ans. (A)

Sol. As given Ratio of length of Rod and its shadow is $1:\sqrt{3}$



Hence by 30° + 60° – 45° Angle property

So angle of elevation of Sun is 30°

79. Which of the following is correct ?

(A) Mode = 2 Median - 3 Mean

(B) Mode =2 Median + 3 Mean

(C) Mode = 3 Median - 2 Mean

(D) Mode = 3 Median + 2 Mean

Ans. (C)

Sol. Correct relation is Mode = 3 Median – 2 Mean

80. Which of the following canot be the Probability of an event?

(A) $\frac{2}{3}$ (B) -1.5 (C) 15% (D) 0.7

Ans. (B)

Sol. Probability cannot be = –1.5

81. The particles in the nucleus of an atom are

(A) electron and proton (C) electron and neutron

(C) proton and neutron (D) electron, proton and neutron

Ans. (C)

Sol. Nucleus in an atom is constituted by protons and neutrons.

82. The heaviest particle in an atom is

(A) proton (B) electron (C) neutron (D) neutron and proton

Ans. (C)

Neutron is slightly heavier than proton

mass of a neutron = 1.675×10^{-27} kg

mass of a proton = 1.672×10^{-27} kg

83. In the process of sublimation

(A) Solid goes to gas state

(B) Liquid goes to gas state

(C) Solid goes to liquid state

(D) Liquid goes to solid state

Ans. (A)

$$\text{Solid} \xrightarrow{\text{Sublimation}} \text{Gas}$$

84. Avogadro's number is

(A) number of atoms or molecules in 1 gm of any substance

(B) number of atoms or molecules in 1 kg of any substance

(C) number of atoms or molecules in 1 mole of any substance

(D) number of electrons in 1 gm of any substance

Ans. (C)

Number of atoms or molecules in 1 moles of any substance

1 mole of any substance = Avogadro's no. of particle

$= 6.022 \times 10^{23}$ particles.

85. Force

(A) Causes Motion

(B) Changes motion

(C) Does not change motion

(D) None of these

Ans. (B)

86. A body with an initial velocity 10 km / hour comes to rest after 15 minutes. Then the distance covered by the body is -

(A) 2.5 km

(B) 1.25 km

(C) 5 km

(D) 10 km

Ans. (B)

Sol. u = 10 km/h

v = 0

$$t = 15 \text{ min} = \frac{15}{60} = \frac{1}{4} \text{h}$$

$$\therefore a = \frac{v-u}{t} = \frac{0-10}{\frac{1}{4}} = -40 \text{km/h}^2$$

$$\therefore s = \frac{v^2-u^2}{2a} = \frac{0-(10)^2}{2\times(-40)} = \frac{100}{80} = 1.25 \text{ km}$$

87. The mass of moon is 7.34 x 10^{22} kg and the radius of moon is 1737 km. The escape velocity at moon is -

(A) 1.25 km/sec (B) 2.37 km/sec (C) 11.29 km/sec (D) 5 km/sec

Ans. (B)

Sol. $v_e = \sqrt{\frac{2GM}{R}}$

$$= \sqrt{\frac{2\times 6.67\times 10^{-11}\times 7.34\times 10^{22}}{1737\times 10^{3}}}$$

$= \sqrt{5.637\times 10^{6}}$ m/s

$= 2.37 \times 10^{3}$ m/s

$= 2.37$ km/s

88. A boat can float and move in a river due to -

(A) Archimedes principle and viscous force (B) Frictional force and Archimedes principle

(C) Pascal's law and Archimedes principle (D) Newton's law and Pascal's law

Ans. (A)

89. An iron ball of mass 2kg is lifted by 2 m against the gravitational force. The work done in the process is -

(A) 19.6 Joule (B) 39.2 Joule (C) 9.8 Joule (D) 78.4 Joule

Ans. (B)

Sol. W = F.s = mgh

= (2kg)(9.8 m/s^2)(2m)

= 39.2 J

90. To see the full image of an object the minimum size of a plane mirror should be-

(A)half the size of the object (B) equal to the size of the object

(C) double the size of the object (D) four times the object size

Ans. (A)

91. . Which of the following is responsible for absorption of light energy during photosynthesis?

(A)Chlorophyll (B) Stomata (C) Stem (D) Root

Ans. (A)

Sol. Chlorophyll pigment is responsible for absorption of light energy during photosynthesis, as chlophyll pigment have the capacity to trap sun light.

92. Which part of a plant shows negative response to light?

(A) Leaf (B) Stem (C) Root (D) Bark

Ans. (C)

Sol. Root part of a plant shows negative response to light and shows positive geotropic movement.

93. In Bryophyllum, which plant part is used for developing a new plant?

(A) Chlrophyll (B) Root (C) Bud (D) Leaf

Ans. (D)

Sol. In Bryophyllum, leaf part is used for developing a new plant and this process is know as Natural vegetative propagation.

94. Which of the following is an example of unisexual flower?

(A) Hibiscus (B) Rose (C) Papaya (D) Mustard

Ans. (C)

Sol. Papaya is an example of unisexual flower, because at their development state they either posses stamen or carpel.

95. Which of the following helps in the activation of enzyme pepsin M stomach?

(A) HCl (B) NaCl (C) Potassium (D) Calcium

Ans. (A)

Sol. HCl helps in the activation of enzyme pepsin in stomach, as pepsin present in the stomach in its inactive form pepsinogen and in the presence of HCl, pepsinogen convert into pepsin.

96. In human muscle cells, which of the following is produced after breakdown of glucose in absence of Oxygen?

(A) Ethanol (B) Starch (C) Lactic Acid (D) Pyruvate

Ans. (C)

Sol. In human muscle cells lactic acid is produced after breakdown of glucose in absence of oxygen.

97. The instrument which is used for the measurement of blood pressure is known

(A) Oxymeter (B) Thermometer (C) Sphygmomano meter (D) Glucometer

Ans. (C)

Sol. Sphygmomanometer is used for the measurment of blood pressure.

98. If a human Zygote, cell carries sex chromosomes XY, then it will develop into a -

(A) Male (B) Female (C) Bisexual (D) Genetically abnormal child

Ans. (A)

Sol. if it human zygote, cell carries sex chromosomes XY, then it will develop into male and it it carries sex chromosomes 'XX' then it will develope into female.

99. Which of the following is not an example of a bio-mass energy source?

(A) Wood (B) Gobar Gas (C) Nuclear energy (D) Coal

Ans. (C)

Sol. Nuclear energy is not an example of biomass energy source wood, Gobar gas and coal are the examples of Bio mass energy source.

100. In energy flow diagram of ecosystem, which trophic level lies at the bottom?

(A)Primary Consumer (B) Producer (C) Tertiary Consumer (D) Decomposer

Ans. (B)

Sol. In energy flow diagram of ecosystem, producers lies at the bottom.