

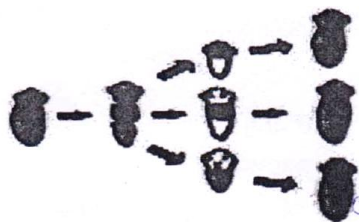
Date: 00/00/2017

Max. Marks: 100

Time allowed: 90 mins

**SOLUTIONS**

1. This diagram shows the process of



- (1) Binary Fission      (2) Multiple fission      (3) Regeneration      (4) Budding

Ans. 3

Sol. The following diagram shows the method of reproduction through regeneration in planaria.

2. The gene which control the blood group represented by the letter

- (1) B                      (2) E                      (3) I                      (4) O

Ans. 3

Sol. The gene which control the blood group represented by the letter I

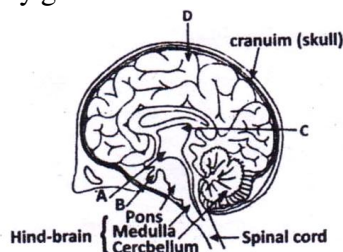
3. Person who are infected with \_\_\_\_\_ donate eyes

Sol. Person who are infected by AIDS, Hepatitis B or C and Rabies cannot donate eyes as it can be infections to the other person.

- (1) AIDS                      (2) Diabetes                      (3) Hepatitis B or C      (4) Rabies

Ans. 2

4. Which part of brain shows pituitary gland?



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

Ans. 1

Sol. Refer Figure 7.3, Pg 118 of NCERT X

5. The hormone which promote cell division in plants is.....

- (1) Gibberellins                      (2) Abscisic acid                      (3) Cytokinins                      (4) Auxins

Ans. 3

Sol. Refer Page 122, last paragraph of NCERT X

6. Which one of the following is a type of nutrition in Amoeba?

- (1) Holozoic                      (2) Autotrophic.                      (3) Parasitic.                      (4) Saprophytic

Ans. 1

Sol. Holozoic mode of nutrition is the heterotrophic nutrition in amoeba.

7. ....transports products of photosynthesis from the leaves where they are synthesised to other parts of the plant.

- (1) Xylem                      (2) lymph                      (3) nephrons                      (4) phloem

**Ans. 4**

**Sol.** Xylem transports water and minerals whereas phloem transports food in plants.

8. Which of the following is a biotic components of an ecosystem?

- (1) Living organisms      (2) Temperature      (3) Soil and minerals      (4) All of the above

**Ans. 1**

**Sol.** Biotic components are the living components of ecosystem.

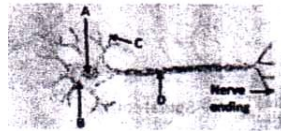
9. .... is a dark muscular diaphragm that controls the size of the pupil.

- (1) cornea                      (2) retina                      (3) Iris                      (4) Crystalline lens

**Ans. 3**

**Sol.** Iris controls the size of pupil.

10. Which part of neuron shows Dendrite?



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

**Ans. 2**

**Sol.** Dendrite is the afferent part that receive impulses.

11. Which part of the cell is also termed as 'suicide bags of the cell'?

- (1) Ribosomes                      (2) Golgi bodies                      (3) Lysosomes                      (4) Mitochondria

**Ans. 3**

**Sol.** Lysosomes play an important role in autolysis. Therefore, called as suicidal bag of the cell.

12. Which tissue of the following connects bone and muscle?

**Sol.** Tendon connects bone with muscles.

- (1) Ligament                      (2) Cartilage                      (3) Areolar Tissue                      (4) Tendon

**Ans. 4**

13. Which of the following is correct order for classification of animals.

- (1) Kingdom, Phylum, Class, Order, Family, Genus, Species  
(2) Kingdom, Phylum, Order, Class, Genus, Family, Species  
(3) Kingdom, Class, Order, Phylum, Genus, Family, Species  
(4) Kingdom, Class, Genus, Phylum, Family, Order, Species

**Ans. 1**

**Sol.** Refer NCERT IX - Pg 83.

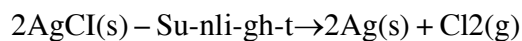
14. What factors could lead to the rise of new species?

- (1) Natural Selection                      (2) Genetic drift.  
(3) Acquisition of traits during life time                      (4) All of above

**Ans. 4**

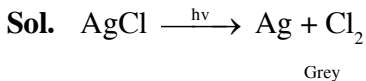
**Sol.** Refer NCERT X Class Pg 150.

15. White silver chloride turns.....in sunlight.



- (1) Grey (2) Brown (3) Blue (4) Green

Ans. 1



16. Which one of the following is not an organic acid?

- (1) Citric acid (2) Formic acid (3) Carbonic acid (4) Carboxylic acid

Ans. 3

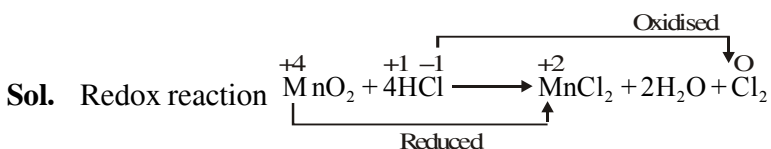
Sol. Carbonic acid ( $\text{H}_2\text{CO}_3$ ) is inorganic acid.

17. What type of reaction is this?



- (1) Redox reaction (2) Displacement reaction  
(3) Double displacement reaction (4) Decomposition reaction

Ans. 1



18. The atmosphere of Venus is made up of thick white and yellowish clouds of

- (1) Acetic acid (2) Sulphuric acid (3) Nitric acid (4) Hydrochloric acid

Ans. 2

Sol. Sulphuric acid

19. Aqua regia is a highly corrosive, fuming liquid. It is one of the few reagents that is able to dissolve.....

- (1) Platinum (2) Gold (3) Both 1 and 2 (4) Neither 1 or 2

Ans. 3

Sol. Aqua regia can dissolve both platinum and gold.

20. ....is a non-metal but it is lustrous.

- (1) Carbon (2) Sulphur (3) Bromine (4) Iodine

Ans. 4

Sol. Iodine is lustrous non-metal

21. \_\_\_\_\_plants are one of the most efficient converters of sunlight into cheptical energy.

- (1) Jatropha (2) Sugarcane (3) Cotton (4) Sunflower

Ans. 2

Sol. Sugarcane

22. The head of a soap molecule is known as \_\_\_\_\_

- (1) Hydrocarbon (2) Hydrophobic  
(3) Hydrogen Carbonate (4) Hydrophilic .

Ans. 4

Sol. Head of soap molecule is hydrophilic.

23. Esters are formed by the combination of

- (1) Alcohol + Aldehyde (2) Carboxylic Acid + Alcohol  
(3) Carboxylic Acid + Aldehyde (4) Alcohol + Aldehyde

**Ans. 2**

**Sol.** Esters are formed by the combination of carboxylic acid and alcohol.

24. .... Was the element which was discovered later and replaced Eka-aluminum.

- (1) Scandium (2) Gallium (3) Germanium (4) Silicon

**Ans. 2**

**Sol.** Gallium replaced Eka-Aluminium

25. An isotope of..... used in the treatment of cancer.

- (1) Cobalt (2) Iodine (3) Uranium (4) Chlorine

**Ans. 1**

**Sol.** Isotope of cobalt is used in the treatment of cancer.

26. Face cream is an example of \_\_\_\_\_

- (1) Aerosol (2) Emulsion (3) Foam (4) Gel

**Ans. 2**

**Sol.** Face cream is an example of emulsion.

27. For spherical mirrors of small apertures, the radius of curvature is found to be.....

- (1) equal the focal length, (2) twice the focal length.  
(3) thrice the focal length. (4) There is no relation between them.

**Ans. 2**

**Sol.** Radius of curvature is almost equal to twice the focal length.  $R = 2f$ .

28. A convex mirror used for rear-view on an automobile has a radius of curvature of 3.00 m. If a bus is located at 5.00 m from this mirror, find the size of the image.

- (1) 0.32 m (2) 0.23 m (3) 0.87 m (4) 1.15 m

**Ans. 2**

**Sol.** In question of image is asked but given answer include magnification as well as position of the image

For convex mirror

$$R = + 3 \text{ m}$$

$$u = - 5 \text{ m}$$

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f} = \frac{2}{R}$$

$$\frac{1}{v} + \left(\frac{1}{-5}\right) = \frac{1}{f} = \frac{2}{R}$$

$$\frac{1}{v} = \frac{2}{R} - \left(\frac{1}{-5}\right)$$

$$\frac{1}{v} = \frac{2}{3} + \frac{1}{5}$$

$$\frac{1}{v} = \frac{13}{15}, \quad v = \frac{15}{13} \text{ m} = 1.15 \text{ m}$$

$$m = \frac{-v}{-4} = 0.23$$

Position of image = 1.15 m

29. The net power (P) of three lenses having powers P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> placed in contact is given by

(1)  $P = P_1 \times P_2 \times P_3$

(2)  $P = P_1 + P_2 + P_3$

(3)  $1/P = 1/P_1 + 1/P_2 + 1/P_3$

(4)  $P = (P_1 + P_2 + P_3)/3$

Ans. 2

Sol. Net power of combination of lenses is given by

$$P = P_1 + P_2 + P_3 + \dots + P_n$$

30. Two wires that are made up of two different materials whose specific resistance are in the ratio 2:3, length in ratio 3:4 and area in 4:5. The ratio of their resistance is

(1) 6:5

(2) 6:8

(3) 5:8

(4) 1:2

Ans. 3

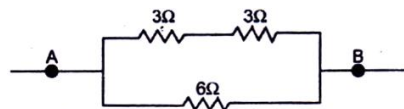
Sol.  $R = \rho \frac{l}{A}$  -----(1)

$$R_1 = \frac{\rho_1 l_1}{A_1} = 2 \times \frac{3}{4} = \frac{6}{4} = \frac{3}{2}$$

$$R_2 = \frac{\rho_2 l_2}{A_2} = 3 \times \frac{4}{5} = \frac{12}{5}$$

$$\frac{R_1}{R_2} = \frac{3/2}{12/5} = \frac{5}{8}$$

31. The equivalent resistance between the points A and B in the circuit as shown in the figure below is



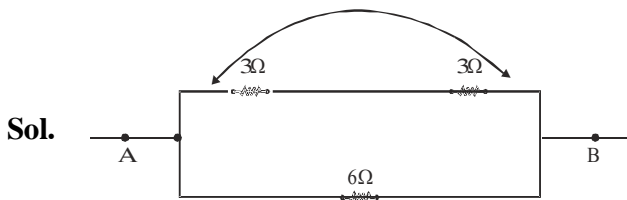
(1) 3

(2) 13

(3) 6

(4) 1/3

Ans. 1



$3\Omega$  and  $3\Omega$  are in series.

Net resistance of upper arm =  $6\Omega$ .

$6\Omega$  and  $6\Omega$  are in parallel

$$\frac{1}{R} = \frac{1}{6} + \frac{1}{6}$$

$$R = 3\Omega$$

**32.** What is the unit of resistivity

- (1)  $\Omega \text{ m}^2$                       (2)  $\Omega \text{ m}^{-1}$                       (3)  $\Omega \text{ m}^{-2}$                       (4)  $\Omega \text{ m}$

**Ans. 4**

**Sol.** Unit of Resistivity - ohm m

$$R = \rho \frac{\ell}{A}, \quad \rho = \frac{RA}{\ell}$$

**33.** 100 J of heat are produced each second in a  $4\Omega$  resistance. Find the potential difference across the resistor

- (1) 400V                      (2) 10 V                      (3) 20V                      (4) 25 V

**Ans. 3**

**Sol.** Power = 100 J/s

$$P = \frac{V^2}{R}, \quad V = 20V$$

**34.** Two bulbs are marked 100W, 220V and 50 W, 110 V. Calculate the ratio of their resistances.

- (1) 2:1                      (2) 1:2                      (3) 3:4                      (4) 1:3

**Ans. 1**

**Sol.**  $P = \frac{V^2}{R}, \quad R = \frac{V^2}{P}$

for, 100 W, 220V,  $R_1 = \frac{(220)^2}{100} = 484\Omega$

for 50W, 110V,  $R_2 = \frac{(110)^2}{50} = 242\Omega$

$$\frac{R_1}{R_2} = 2 : 1$$

**35.** An induced current is produced when a magnet is moved into a coil. The magnitude of induced current does not depend on

- (1) The speed with which the  
(2) The resistivity of the wire of the  
(3) The number of turns of the coil magnet is moved  
(4) The strength of the magnet

**Ans. 3**

**Sol.** The magnitude of induced current does not depend upon the number of turns of coil.

**36.** A Strong smelling substance called ethyl mercaptane which is added to LPG cylinders to help in the detection of gas leakage has the chemical formula as

- (1)  $\text{C}_2\text{H}_5\text{SH}$                       (2)  $\text{C}_2\text{H}_5\text{CHO}$                       (3)  $\text{C}_2\text{H}_5\text{OH}$                       (4)  $\text{C}_2\text{H}_5\text{COOH}$ ,

**Ans. 1**

**Sol.**

37. The aviation fuel which is used in the engine of jet aeroplanes is very close to  
(1) Diesel (2) Natural Gas (3) Petrol (4) Kerosene

**Ans. 1**

**Sol.**

38. The unit of solar constant is  
(1) kWh (2) kW/m (3) kW/m<sup>2</sup> (4) kW/m<sup>3</sup>

**Ans. 3**

**Sol.** The unit of solar constant is

$$\text{W/m}^2 \text{ or } \text{kW/m}^2$$

solar constant  $\Rightarrow$  solar energy received per unit area.

39. The flaws like internal cracks etc. in the metal blocks are detected by using \_\_\_\_\_

(1) Reverberation (2) Ultrasound (3) Infrasound (4) Echo location

**Ans. 2**

**Sol.** ultrasound waves are used to detect the flaws.

40. A person standing at a certain distance from a wall produces a loud sound. He hears the echo of the sound after 1.8s. Calculate the distance between the wall and the observer if the velocity of sound in air is 340 m/s.

(1) 612m (2) 306m (3) 377.7m (4) 755.4m

**Ans. 2**

**Sol.** Distance travelled =  $v \times t = 340 \times 1.8 = 612 \text{ m}$

$$\text{distance between wall observer} = \frac{612}{2} = 306\text{m}$$

41. Arrange the following states in ascending order of population density.

I. Assam II. Nagaland III. Tripura IV. Mizoram  
(1) I, II, III, IV, (2) II, III, IV, I (3) IV, II, III, I (4) IV, I, II, III

**Ans. 3**

**Sol.** Answer will be IV, II, III, and I according to MAP given in 9th geography NCERT book (page no. 74).

42. Match list I Animals/plants with list II category of existence and select the answer using the codes given below.

List I (Animals/plants list II {category of existence)

I. Black buck	A. Extinct
II. Asiatic elephant	B. Rare
III. Andaman Pig	C. Endangered
IV. Himalayan brown bear	D. Vulnerable
V. Pink head duck	E. Endemic
(1) I-B, II-C, III-A, IV-D, V-E	(2) I-C, II-B, III-D, IV-E, V-A
(3) I-C, II-D, III-IV-b, V-A.	(4) I-E, II-D, III-B, IV-A, V-B

**Ans. 3**

**Sol.** Answer will be 3 option according to 10 th geography NCERT book (page no. 18)

43. Find out-the incorrect statement with respect to Black soil.

(1) Black soil is well known for its capacity to hold moisture  
(2) Black soil is rich in phosphoric content  
(3) Black soil is sticky when wet and difficult to work  
(4) Deep crack in black soil helps in the proper aeration of the soil

**Ans. 2**

**Sol.** Black soil lacks phosphoric contents (10th geography NCERT page. 12)

**44.** Which type of drainage patterns is formed when the river channel follows the slope of the terrain?

- (1) Radial                      (2) Rectangular                      (3) Trellis                      (4) Dendritic

**Ans. 4**

**Sol.** The dendritic pattern develops when the river channel follows the slope of the terrain (IX the geography page 28).

**45.** Contour lines represent \_\_\_\_\_ .

- (1) Areas recording same amount of rainfall.      (2) Areas having same degree of temperature.  
(3) Areas having same height above mean sea level.      (4) Areas showing same pressure.

**Ans. 3**

**Sol.** Contour lines represents area with same height above mean sea level.

**46.** Tropic of cancer passes through \_\_\_\_\_

- (1) Mizoram                      (2) Bihar                      (3) U.P                      (4) Nagaland

**Ans. 1**

**Sol.** Tropic of cancer passes through Mizoram.

**47.** Arrange the following Sanctuaries/National parks of India from North to South direction.

- I. Bandipur state.                      II. Sariska                      III. Dachigam                      IV. Periyar

**Ans. 3**

**Sol.** See map in the geography (page no. 65).

**48.** Sivasamudram waterfall is formed

- (1) River Kaveri                      (2) River Tapti                      (3) River Narmada                      (4) River Godavari

**Ans. 1**

**Sol.** River Kaveri makes the second biggest waterfall in India known as Sivasamudram.

**49.** Which of the following statement is correct about sugarcane crop?

1. It grows well in hot climate with a temperature of 25°C  
2. The major sugarcane producing states are Himachal and Haryana  
(3) It is a tropical as well as crop, grows well in hot and humid climate  
(4) India is the first largest producer of sugarcane

**Ans. 3**

**Sol.** See page 44 in 10th geography.

**50.** Which of the following industries uses bauxite as a raw material?

- (1) Aluminium                      (2) Cement                      (3) Jute                      (4) Steel

**Ans. 1**

**Sol.** Bauxite is an aluminium ore used in aluminium industry.

**51.** Which of the following is not a non-ferrous mineral?

- (1) Bauxite .                      (2) Copper                      (3) Zinc                      (4) Manganese

**Ans. 4**

**Sol.** Manganese is ferrous mineral.

**52.** Which of the following mountain peak-does not lie in India?

- (1) Namcha Barwa      (2) Nanda Devi                      (3) Annapurna                      (4) Kamet

**Ans. 3**

**Sol.** Annapurna peak is in Nepal.



- 53.** In the context of France, Taille was \_\_\_\_\_  
(1) Direct tax levied by the state  
(2) A tax levied by the church  
(3) The tax levied on the articles of everyday consumption  
(4) None of these

**Ans. 1**

**Sol.** Taille was direct tax levied by the state.

- 54.** Find out the incorrect statements with regard to Rowlatt Act.

I. Rowlatt Act was passed in 1919

II. The act allowed detention of political prisoners without trial for 4 years

III. The act was passed with the consent of Indian members

IV. The act allowed detention of political prisoners without trial for two years

- (1) Only I and II      (2) Only III and IV      (3) Only I and III      (4) Only I and IV

**Ans. 3**

**Sol.** Rowlatt act was not passed with the consent of Indian members. It allowed detention with out trial for two years.

- 55.** Which of the following continent was discovered by Christopher's Columbus?

- (1) America      (2) Africa      (3) Europe      (4) Asia

**Ans. 1**

**Sol.** Christopher Columbus was sponsored by 9 Spanish king to find sea route to India, but he accidentally discovered America.

- 56.** Which of the following state lead the unification of Germany?

- (1) Rhineland      (2) Hanover      (3) Prussia      (4) Brunswick

**Ans. 3**

**Sol.** Prussia lead the unification of Germany.

- 57.** Who was the founder of the Hoa Hao movement?

- (1) Phan Boi Chau      (2) Hyunh Phu So      (3) Liang      (4) Phanchu

**Ans. 2**

**Sol.** Hyunh phu so was the founder of Hoa Hao movement.

- 58.** Which of the following style of education was provided by Tonkin Free School (1907)

- (1) Chinese      (2) French      (3) Western      (4) Vietnamese

**Ans. 3**

**Sol.** Tonkin free school was started to provide western education.

- 59.** James Hangreaves devise \_\_\_\_\_

- (1) Spinning Jenny      (2) Steam engine      (3) Spinning wheel      (4) Printing machine

**Ans. 1**

**Sol.** Tames Hargreaves devised spinning Jenny.

- 60.** Which of the following pair of Author and Novel is correctly matched

- (1) Srinivas-----Indulekha.  
(2) Bankimchander Chattopadhyay— Durgesh Nandini  
(3) Devki Nandan Khatri— Godan  
(4) O.Chandu Menon — Pariksha Guru

**Ans. 2**

**Sol.** Durgesh Nandihi was written by Bankimchandra Chattopandyay.

**61.** The Russian Parliament was called as  
(1) Reichstag (2) National Assembly (3) House of commons (4) Duma

**Ans. 4**

**Sol.** Russian parliament is known as Duma.

**62.** Hitler's ideology related to the geopolitical concept of Lebensraum, or living space implied:

- (1) There was no equality between people, but only a racial hierarchy
- (2) Only those species survived on earth that could adapt themselves to changing climatic conditions.
- (3) New territories had to be acquired for settlement to increase the area of the mother country.
- (4) An exclusive racial community of pure Germans to be created by physically eliminating all those who were seen as undesirable

**Ans. 3**

**Sol.** Oraons tribals are found

**63.** Kalang Community of Java

- (1) Spinners (2) Shifting cultivators (3) Potters (4) Cattle Herders

**Ans. 2**

**Sol.** Kalangs were shifting cultivators and wood cutters of Java.

**64.** Which of the following forest communities is wrongly matched.

- (1) Santhals.....Jharkhand (2) Oraon-----Nagaland
- (3) Gonds.....Chhattisgarh (4) Khasas-----Himachal

**Ans. 2**

**Sol.** Oraons tribals are found in Indian states of Jharkhand, Chhattisgarh, West Bengal, Odisha and Bihar.

**65.** Which of the following State fall in the category of 'holding together federations'?

- (1) Switzerland (2) Australia (3) US (4) Spain.

**Ans. 4**

**Sol.** Spain is holding together federation whereas Switzerland, Australia and US are coming together federation.

**66.** Match list I with list II and select the answer using the order given below the list

**List I**

- I. Pressure group
- II. Long term
- III. Single issue
- IV. Political party

- (1) I-C, II -D, III-A, IV-B
- (3) I-B, II -D, III-C, IV-A

**List II**

- A. Assam Gan Parishad
- B. Fertilizer dealer association
- C. Women movement
- D. Narmada Bachao Andolan

- (2) I-B, II -C, III-D, IV-A
- (4) I-C, II -C, III-B, IV-A

**Ans. 3**

**Sol.** Assam Gan Parishad is a political party. Fertilizer dealing association is a pressure group. Women movement is a single issue movement and Narmada Bachao Andolan was a long term movement.

**67.** Which of the following union territory has its own assembly?

- (1) Chandigarh (2) Lakshadweep (3) Puducherry (4) Daman and diu

**Ans. 3**

**Sol.** Puducherry has its own assembly.

**68.** In which of the following country the participation of women in public life is highest.

- (1) Denmark (2) Estonia (3) Slovakia (4) Norway

**Ans. 4**

**Sol.** Norway has highest participation of women in public life.

**69.** How long can the Rajya Sabha delay the money bill passed by the Lok Sabha.

- (1) 7 days                      (2) 20 days                      (3) 25 days                      (4) 14 days

**Ans. 4**

**Sol.** Rajya Sabha can delay money bill for 14 days.

**70.** By which constitutional amendment two words 'Secular' and 'Socialist' were added in the preamble of the Indian constitution.

- (1) 44<sup>th</sup>                      (2) 80<sup>th</sup>                      (3) 42<sup>nd</sup>                      (4) 52<sup>nd</sup>

**Ans. 3**

**Sol.** Secular and Socialist words were added in preamble in 1976 through 42<sup>nd</sup> amendment.

**71.** In which year South Africa become a democratic country?

- (1) 26 April 1995              (2) 26 May 1996              (3) 26 April 1994              (4) 25 April 1996

**Ans. 3**

**Sol.** South Africa become independent on 26 April 1994.

**72.** Which of the following statement about Kosovo is correct?

- (1) Before partition, Kosovo was a province of Russia  
(2) There were majority of the Albanian people in this province  
(3) Massacre of Serbs took place  
(4) Albanian nationalist Milosevic had won the election

**Ans. 2**

**Sol.** Albanians were in majority in Kosovo.

**73.** Infant mortality refers to the death of a child before completing the age of \_\_\_\_\_.

- (1) 1 year                      (2) 2 year                      (3) 3 year                      (4) 5 year

**Ans. 1**

**Sol.** Infant mortality rate refers to death of a child before completing age of one year.

**74.** Which organization carries out survey for determining the poverty line?

- (1) NSSO    (2) NSO  
(3) Planning commission                      (4) None of the above

**Ans. 1**

**Sol.** NSSO carries survey to determine poverty.

**75.** The price announced by the Government before the sowing season is called \_\_\_\_\_.

- (1) Minimum Price              (2) Support price              (3) Market price              (4) Issue price

**Ans. 1**

**Sol.** Minimum support price (MSP) is declared by government before sowing season.

**76.** Which of the following group of countries has better performance in terms of human development than India?

- (1) Bhutan, Srilanka, Nepal                      (2) Pakistan, Bangladesh, Srilanka  
(3) Srilanka, Indonesia, Cuba                      (4) Ghana, Kenya, Bangladesh

**Ans. 3**

**Sol.** Srilanka, Indonesia and Cuba show better performance in terms of human development than India.

**77.** What do you mean by collateral?

- (1) It is the total sum of money with a person  
(2) It is things kept in the locker

- (3) It is guarantee given by the borrower to the lender  
 (4) It is the security to a lender until the loan is repaid

**Ans. 4**

**Sol.** Collateral is security to a lender until the loan is repaid.

**78.** Right to choose, Right to seek redressal, Right to represent and Right to be informed are

- (1) Fundamental Rights (2) Consumer rights  
 (3) Fundamental duty (4) Consumer Movement

**Ans. 2**

**Sol.** Right to choose, seek redressal, represent and informed are all consumer right.

**79.** In India who directly controls the 'Monetary policy'

- (1) Finance department of India (2) Reserve bank of India  
 (3) State bank of India (4) Prime Minister of India

**Ans. 2**

**Sol.** RBI controls the Monetary Policy of India.

**80.** On the basis of ownership types of economy are:

- (1) Capitalistic, Socialistic, Developed-Economy (2) Socialistic, Mixed, Developing-Economy  
 (3) Capitalistic, Socialistic, Mixed-Economy (4) Mixed, Developed, Developing Economy

**Ans. 3**

**Sol.** Mixed, capitalistic and socialistic economy are based.

**81.** If  $(\sqrt[3]{2})^{12} \times (\sqrt{5})^8 = [(2 \times 5)^2]^x$  then the value of x is \_\_\_\_\_

- (1) 4 (2) 2 (3) 10 (4) 12

**Ans. 2**

**Sol.**  $(2)^4 \times (5)^4 = 2^{2x} \times 5^{2x}$

$$\therefore x = 2$$

**82.** The average of 9 numbers is 18. If the average of first five numbers is 19 and the average of last 5 numbers is 17, find the 5th number.

- (1) 16 (2) 20 (3) 18 (4) 22

**Ans. 3**

**Sol.**  $a_1 + a_2 + \dots + a_9 = 162$

$$a_1 + a_2 + \dots + a_5 = 95$$

$$a_5 + a_6 + \dots + a_9 = 85$$

---


$$162 + a_5 = 180$$

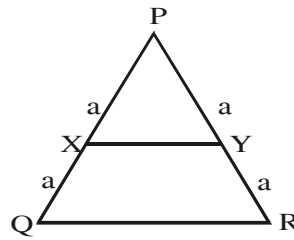
$$a_5 = 18$$

**83.** In  $\Delta PQR$ ,  $PQ = PR$  and X is the midpoint of PQ. XY is parallel to QR and meets PR at point Y. What kind of triangle is PXY?

- (1) Isosceles (2) Scalene (3) Equilateral (4) Right triangle

**Ans. 1**

**Sol.**  $\Delta PXY$  isosceles



- 84.** If  $\alpha, \beta$  are roots of polynomial  $3x^2 + 6x + K$  such that  $\alpha^2 + \beta^2 + \alpha\beta = \frac{8}{3}$  then find the value of K.  
 (1) -8                      (2) 8                      (3) -4                      (4) 4

**Ans. 4**

**Sol.** If  $\alpha, \beta$

$$\alpha + \beta = -2, \alpha\beta = k/3$$

$$\alpha^2 + \beta^2 + \alpha\beta = \frac{8}{3}$$

$$(\alpha + \beta)^2 - \alpha\beta = \frac{8}{3}$$

$$4 - \frac{k}{3} = \frac{8}{3}$$

$$\frac{4}{3} = \frac{k}{3}, k = 4$$

- 85.** If  $x^2 - 5x + 1 = 0$  then the value of  $x^5 + \frac{1}{x^5}$  is \_\_\_\_\_  
 (1) 2025                      (2) 2725                      (3) 2225                      (4) 2525

**Ans. 4**

**Sol.**  $x^2 - 5x + 1 = 0$

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

$$x^3 + \frac{1}{x^3} + 3(5) = 125$$

$$x^3 + \frac{1}{x^3} = 125 - 15 = 110$$

$$\begin{aligned} \left(x^5 + \frac{1}{x^5}\right) &= \left(x + \frac{1}{x}\right)^5 - 5\left(x^3 + \frac{1}{x^3}\right) - 10\left(x + \frac{1}{x}\right) \\ &= 3125 - 550 - 50 \\ &= 2525 \end{aligned}$$

- 86.** If  $\operatorname{cosec} \theta + \sin \theta = 2$ , then the value of  $\operatorname{cosec}^{50} \theta + \sin^{50} \theta$  is \_\_\_\_\_  
 (1) 2                      (2) 100                      (3) 0                      (4) 50

**Ans. 1**

**Sol.**  $\operatorname{cosec} \theta + \sin \theta = 2$

$$\sin^2 \theta - 2 \sin \theta + 1 = 0$$

$$(\sin \theta - 1)^2 = 0$$

$$\theta = 90^\circ$$

$$\operatorname{cosec}^{50} \theta + \sin^{50} \theta.$$

$$= 1 + 1 = 2$$

87. The sum of squares of two consecutive even numbers added by 4 is always divisible by \_\_\_\_\_

(1) 24

(2) 16

(3) 8

(4) 32

Ans. 3

Sol.  $(2x)^2 + (2x + 2)^2 + 4$

$$= 4x^2 + 4x^2 + 8x + 8$$

$$= 8(x^2 + x + 1)$$

88. If  $\operatorname{cosec} 4x = \sec 5x$ , then the value of  $\sin 3x + \cos 6x$  is \_\_\_\_\_

(1) 1

(2) 3

(3) 0

(4) 3

Ans. 1

Sol.  $\sec (90 - 4x) = \sec 5x$

$$x = 10$$

$$\sin 30 + \cos 60 = \frac{1}{2} + \frac{1}{2} = 1$$

89. The ratio of radius of base to the height of a right circular cylinder is 1 : 2. If its volume is  $2156 \text{ cm}^3$ , then its total surface area is \_\_\_\_\_

(1)  $1024 \text{ cm}^2$

(2)  $924 \text{ cm}^2$

(3)  $874 \text{ cm}^2$

(4)  $1204 \text{ cm}^2$

Ans. 2



$$\pi r^2 \cdot 2r = 2156$$

$$r^3 = \frac{2156}{2 \times 22} \times 7 = 343$$

$$r = 7$$

$$\text{TSA} = 2\pi r(h + r)$$

$$= 2 \times \frac{22}{7} \times 7 \times 21$$

$$= 924$$

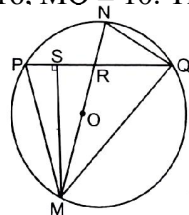
90. In the given figure,  $MP = 16$ ,  $MO = 10$ . The value of  $MO \times MS$  is \_\_\_\_\_

(1) 160

(2) 100

(3) 120

(4) 80



Ans. 4

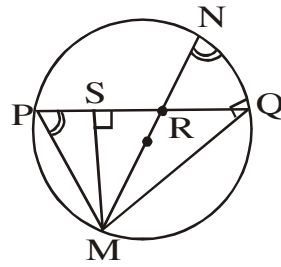
Sol.  $\triangle PSM \sim \triangle NQM$

$$\frac{PS}{NQ} = \frac{SM}{QM} = \frac{PM}{NM}$$

$$\frac{SM}{10} = \frac{16}{NM}$$

$$SM \cdot NM = 160$$

$$SM \cdot OM = 80$$



91. The 7th term of an AP is 5 times the first term and its 9th term exceeds twice the 4th term by 1. The first term of the AP is-----

(1) 151

(2) -39

(3) 3

(4) -124

Ans. 3

Sol.  $a_7 = 5(a)$

$a_n = 2a_4 + 1$

$a + 6d = 5a$

$a + 8d = 2(a + 3d) + 1$

$d = \frac{2a}{3}$

$a + 8d = 2a + 6d + 1$

$a - 2d + 1 = 0$

$a - 2 \times \frac{2a}{3} + 1 = 0$

$-\frac{a}{3} = -1, a = 3$

92. Find the centre of circle passing through the points (1, 4) (-2, 6) and (3, 7).

(1) (1, 1)

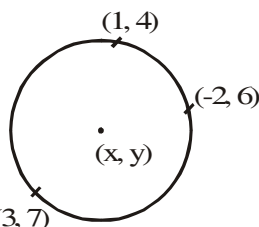
(2) (0, 0)

(3)  $\left(\frac{1}{2}, \frac{7}{2}\right)$

(4)  $\left(\frac{1}{2}, \frac{13}{2}\right)$

Ans. 4

Sol.



$(x - 3)^2 + (y - 7)^2 = (x + 2)^2 + (y - 6)^2$

$= (x - 1)^2 + (y - 4)^2$

$- 6x + 9 - 14y + 49$

$= 4x + 4 - 12y + 36$

$10x + 2y = 18$  ... (i)

$-6x + 9 - 14y + 49$

$= -2x + 1 - 8y + 16$

$4x + 6y - 42 = 0$

$2x + 3y - 21 = 0$  ... (ii)

$4x + 4 + 36 - 12y$

$= -2x + 1 - 8y + 16$

$$6x - 4y = -23 \quad \dots(\text{iii})$$

from (i), (ii) and (iii)

$$\left(\frac{1}{2}, \frac{13}{2}\right)$$

93. The length of shadow of a building, when the sun's altitude is  $60^\circ$ , is 20 m less than what it was when it was  $45^\circ$ . The height of the building is \_\_\_\_\_

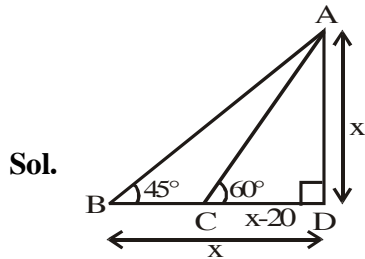
(1) 54.48 m

(2) 47.32 m

(3) 64.32 m

(4) 57.48 m

Ans. 2



$\triangle ACD$

$$\tan 60 = \frac{x}{x-20}$$

$$\sqrt{3}(x-20) = x$$

$$x = \frac{20\sqrt{3}}{\sqrt{3}-1} = 10\sqrt{3}(\sqrt{3}+1)$$

$$= 10(3 + 1.732)$$

$$= 10 \times 4.732$$

$$= 47.32 \text{ m}$$

94. If  $\frac{6^6 + 6^6 + 6^6 + 6^6 + 6^6 + 6^6}{2^6 + 2^6} \times \frac{5^6 + 5^6 + 5^6 + 5^6 + 5^6}{3^6 + 3^6 + 3^6} = 5^n$  then the value of n \_\_\_\_\_.

(1) 6

(2) 0

(3) 12

(4) 7

Ans. 4

Sol.  $\frac{6 \times 6^6}{2 \times 2^6} \times \frac{5 \times 5^6}{3 \times 3^6} = 5^n$

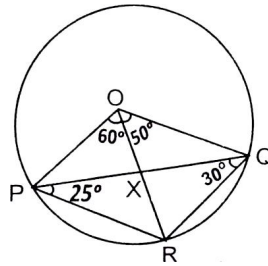
$$\frac{6 \times 6^6 \times 5^7}{6 \times 6^6} = 5^n$$

$$n = 7$$

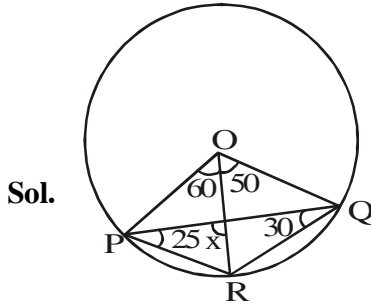


95. In the given Figure, the value of  $\angle P \times R$  is \_\_\_\_\_

- (1)  $85^\circ$
- (2)  $100^\circ$
- (3)  $95^\circ$
- (4)  $120^\circ$



Ans. 3



In  $\triangle OPQ$ ,  $OP = OQ$   
 $\angle OPQ = 35^\circ$   
 $\therefore \angle PXR = 35 + 60 = 95$

96. If  $x^m \cdot y^n = 7889$ , where  $x$  and  $y$  are prime numbers, the value of  $x + y$  is \_\_\_\_\_

- (1) 30
- (2) 60
- (3) 100
- (4) 300

Ans. 1

Sol.  $x^m \cdot y^n = 7^3 \cdot 23^1$   
 $x + y = 30$

97. If  $a = \frac{p-q}{p+q}$ ,  $b = \frac{q-r}{q+r}$ ,  $c = \frac{r-p}{r+p}$ , then the value of  $\frac{(1+a)(1+b)(1+c)}{(1-a)(1-b)(1-c)}$  is \_\_\_\_\_

- (1) 1
- (2) 0
- (3) 121
- (4) 11

Ans. 1

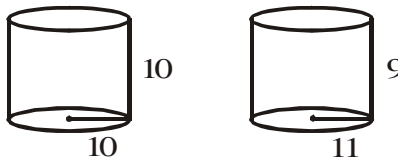
Sol.  $a = \frac{p-q}{p+q}$ ,  $b = \frac{q-r}{q+r}$ ,  $c = \frac{r-p}{r+p}$   
 $\frac{(1+a)(1+b)(1+c)}{(1-a)(1-b)(1-c)} = 1$   
 $\left[ \begin{array}{l} 1+a = \frac{2p}{p+q}, 1+b = \frac{2q}{q+r}, 1+c = \frac{2r}{r+p} \\ 1-a = \frac{2q}{p+q}, 1-b = \frac{2r}{q+r}, 1-c = \frac{2p}{r+p} \end{array} \right]$

98. If radius of a right circular cylinder is increased by 10% and height is decreased by 10%, its volume will

- (1) increase by 9.8%
- (2) decrease by 9.8%
- (3) increase by 8.9%
- (4) decrease by 8.9%

Ans. 3

Sol.



$$V_1 = \pi \times 1000$$

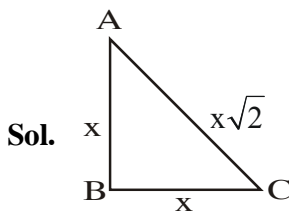
$$V_2 = \pi \times 121 \times 9 = 1089\pi$$

$$(\% \text{ increase}) = \frac{89\pi}{1000\pi} \times 100 = 8.9\%$$

99. The Perimeter of a right isosceles triangle is  $(2 + \sqrt{2})$  m . The length of its hypotenuse is\_\_\_\_\_

- (1) 2 m                      (2) 4 m                      (3)  $\sqrt{6}$  m                      (4)  $\sqrt{2}$  m

Ans. 4



$$(2 + \sqrt{2})x = 2 + \sqrt{2}$$

$$x = 1$$

$$\therefore AC = \sqrt{2}$$

100. A fraction becomes  $\frac{5}{7}$  if 2 is added to both its numerator and denominator. If 4 is added to numerator

and 3 is added to denominator, the fraction becomes  $\frac{7}{8}$ . Find the original Fraction.

- (1)  $\frac{8}{11}$                       (2)  $\frac{3}{5}$                       (3)  $\frac{5}{11}$                       (4)  $\frac{7}{9}$

Ans. 2

Sol.

$$\frac{x+2}{y+2} = \frac{5}{7}, \quad 7x - 5y = -4$$

$$\frac{x+4}{y+3} = \frac{7}{8}, \quad 8x - 7y = -11$$

$$\therefore x = 3, y = 5$$