

Science

Sample Question Paper 10
(Class 10) (Term – 1) (Session 2021-22)

Time: 1 hour 30 minutes

Number of Questions: 50

General Instructions

1. The Question Paper contains three sections.
2. Section A has 24 questions, Attempt any 20 questions.
3. Section B has 24 questions, Attempt any 20 questions.
4. Section C has 12 questions, Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

SECTION – A

Section - A consists of 24 questions. Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

1. Identify "X" and "Y" in the following reaction:



- [A] 4 and 2
[C] 2 and 3

- [B] 3 and 5
[D] 4 and 4

2. Ferrous sulphate crystals lose water when heated. How many molecules of water are lost?

- [A] 5
[C] 2

- [B] 7
[D] 4

3. What will happen, when silver chloride is placed in sunlight for some time?

- [A] White silver chloride changes into grey coloured compound.
[B] Decomposition take place
[C] Both [A] and [B] takes place
[D] Nothing will happen

4. The heating of Lead Nitrate produces brown fumes of "X" gas. Identify "X" from the following:

- [A] Lead oxide
[B] Oxygen
[C] Nitrogen dioxide
[D] Dinitrogen oxide.

5. What happens when copper rod is dipped in iron sulphate solution?

- (i) Copper displace iron.
(ii) Blue colour of copper sulphate solution is obtained.
(iii) Reaction is exothermic.
(iv) No reaction takes place.

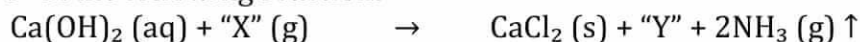
- [A] (i) and (ii)
[C] Only (i)

- [B] (i), (ii) and (iii)
[D] Only (iv)

6. Which gas is evolved, when hydrochloric acid is added in first test tube containing small pieces of marble and then in second test tube containing zinc granules?

- [A] H_2 is first test tube, O_2 in second test tube.
[B] CO_2 is first test tube, H_2 in second test tube.
[C] O_2 is first test tube, Cl_2 in second test tube.
[D] Cl_2 is first test tube, CO_2 in second test tube.

7. Identify "X" and "Y" in the following reaction:



[A] X = NH_4Cl , Y = O_2

[B] X = NH_4Cl , Y = H_2O

[C] X = $(\text{NH}_4)_2\text{SO}_4$, Y = SO_2

[D] X = NH_4OH , Y = O_2

8. What happens when sodium hydroxide is mixed in water?

(i) Hydronium ions will be produced.

(ii) Heat is released during dissolution.

(iii) The process is endothermic.

(iv) Hydroxide ions will be produced.

Choose the correct option:

[A] (i) and (ii)

[B] (ii) and (iv)

[C] (i) and (iii)

[D] Only (iv)

9. Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of following statements are true about the gas evolved?

(i) It turns lime water milky.

(ii) It extinguishes burning splinter

(iii) It dissolves in a solution of sodium hydroxide.

(iv) It has a pungent odour.

[A] (i) and (ii)

[B] (i), (ii), and (iii)

[C] (ii), (iii) and (iv)

[D] (i) and (iv)

10. The correct statements regarding universal indicator is:

[A] It is an indicator having pH = 7

[B] It gives blue colour, pH = 3

[C] It becomes colourless, pH = 7

[D] It gives red colour, pH = 3

11. Which of the following acids does not give hydrogen gas reacting with metals (except Mn, Mg)?

[A] HNO_3

[B] HCl

[C] H_2SO_4

[D] All of these.

12. 2 mL each of Conc. HCl , HNO_3 and a mixture of conc. HCl , & conc. HNO_3 , in the ratio of 3:1 were taken in test tubes labelled as A, B, and C. A small piece of metal was put in each test tube. No change occurred in test tubes A & B, but the metal got dissolved in test tube C. The metal could be:

[A] Al

[B] Au

[C] Cu

[D] Ag

13. Which of the following pairs will be displacement reactions?

[A] Zinc Sulphate Solution & Aluminium metal.

[B] Ferrous Sulphate solution & Silver metal.

[C] Magnesium chloride solution & Aluminium metal.

[D] Silver nitrate Solution & Copper metals.

14. An aluminium strip is kept immersed in freshly prepared ferrous sulphate solution taken in test tube, the change obtained is that:

[A] Light green solution changes to blue.

[B] Green solution slowly turns brown.

[C] Lower end of test tube become slightly warm.

[D] Colourless gas with the smell of burning sulphur is observed.

15. The combination of CO , and H_2 is known as:

[A] Carbon gas

[B] Coal gas

[C] Carbonic gas

[D] Water gas

16. In which of the following groups of organisms, food materials is broken down outside the body & absorbed?

- [A] Mushroom, Green plants, Amoeba
[C] Paramecium, Amoeba, Cuscuta

- [B] Yeast, Mushroom, Bread mould
[D] Cuscuta, Lice, Tapeworm.

17. If we take food, reach in lime juice then:

- [A] Action of ptyalin, on starch is enhanced.
[B] Action of ptyalin, on starch is reduced.
[C] Action of ptyalin, on starch is un-affected.
[D] Action of ptyalin, on starch is stops.

18. During vigorous physical exercise lactic acid is formed from glucose inside the muscles cells because:

- [A] There is lack of oxygen.
[C] There is excess of CO_2

- [B] There is lack of water.
[D] None of the above.

19. Which of the following is accomplished in a plant by utilising the energy stored ATP?

- [A] Transport of food.
[B] Transport of Oxygen.
[C] Transport of water and minerals.
[D] Transport of water, minerals, and food.

20. The dialyser works as kidney except does not perform:

- [A] Osmo-regulation.
[C] Selective reabsorption.

- [B] Tubular secretion.
[D] Ultrafiltration.

21. An object is placed at a distance of 10 cm in front of a plane mirror, then the distance of image from mirror will be

- [A] 5 cm
[C] 20 cm

- [B] 10 cm
[D] 0 cm

22. The relation between focal length "f" and radius of curvature "R" for a spherical mirror is-

- [A] $f = 2R$
[C] $f = R/4$

- [B] $f = R/2$
[D] $f = 2/R$

23. What will be the position and nature of the image of an object formed by a convex mirror placed between infinity and the pole of the mirror?

- [A] in between pole and focus, behind mirror, virtual and erect.
[B] in between pole and focus, behind mirror, virtual and inverted.
[C] in front of mirror, real and erect.
[D] in front of mirror, virtual and erect.

24. A real image is formed by the light rays after reflection or refraction when they -

- (i) Actually meet or intersect with each other.
(ii) Actually converge at a point
(iii) Appear to meet when they are produced in the backward direction
(iv) Appear to diverge from a point

Which of the above statement are correct?

- [A] (i) and (iv)
[C] (i) and (ii)

- [B] (ii) and (iv)
[D] (ii) and (iii)

SECTION - B

Section - B consists of 24 questions (Sl. No. 25 to 48). Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

25. Three beakers labelled as A, B and C each containing 25 mL of water were taken. A small amount of NaOH, anhydrous CuSO_4 and NaCl were added to the beakers A, B and C respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers A and B, whereas in case of beaker C, the temperature of the solution falls. Which one of the following statements(s) is (are) correct?

- (i) In beakers A and B, exothermic process has occurred.
- (ii) In beakers A and B, endothermic process has occurred.
- (iii) In beaker C, exothermic process has occurred.
- (iv) In beaker C, endothermic process has occurred.

[A] (i) only

[B] (ii) only

[C] (i) and (iv)

[D] (ii) and (iii)

26. Which of the following reactions is an endothermic reaction?

[A] Burning of coal.

[B] Decomposition of vegetable matter into compost.

[C] Process of respiration.

[D] Decomposition of calcium carbonate to form quick lime and carbon dioxide.

27. Which among the following is (are) double displacement reaction(s)?

(i) $\text{Pb} + \text{CuCl}_2 \rightarrow \text{PbCl}_2 + \text{Cu}$

(ii) $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$

(iii) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$

(iv) $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$

[A] (i) and (iv)

[B] (ii) only

[C] (i) and (ii)

[D] (iii) and (iv)

28. What happens when dilute hydrochloric acid is added to iron filings? Choose the correct answer.

[A] Hydrogen gas and iron chloride are produced.

[B] Chlorine gas and iron hydroxide are produced.

[C] No reaction takes place.

[D] Iron salt and water are produced.

29. In which of the following chemical equations, the abbreviations represent the correct states of the reactants and products involved at reaction temperature?

[A] $2\text{H}_2(\text{l}) + \text{O}_2(\text{l}) \rightarrow 2\text{H}_2\text{O}(\text{g})$

[B] $2\text{H}_2(\text{g}) + \text{O}_2(\text{l}) \rightarrow 2\text{H}_2\text{O}(\text{l})$

[C] $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l})$

[D] $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{g})$

30. Which of the following gives the correct increasing order of acidic strength?

[A] Water < Acetic acid < Hydrochloric acid.

[B] Water < Hydrochloric acid < Acetic acid.

[C] Acetic acid < Water < Hydrochloric acid.

[D] Hydrochloric acid < Water < Acetic acid.

Question No. 31 to 35 consists of two segments – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

[A] Both A and R are **True** and R is the correct explanation of A.

[B] Both A and R are **True** and R is NOT the correct explanation of A.

[C] A is **True** but R is **false**

[D] A is **False** but R is **true**.

31. Assertion (A): Quick lime reacts vigorously with water releasing a large amount of heat.

Reason (R): The above chemical reaction is an exothermic reaction.

[A] Both A and R are True and R is the correct explanation of A.

[B] Both A and R are True and R is NOT the correct explanation of A.

[C] A is True but R is false

[D] A is False but R is true.

32. Assertion (A): Aqueous solution of ammonium nitrate turns the blue litmus into red.

Reason (R): Ammonium nitrate is a salt of strong acid & strong base.

[A] Both A and R are True and R is the correct explanation of A.

[B] Both A and R are True and R is NOT the correct explanation of A.

[C] A is True but R is false

[D] A is False but R is true.

33. Assertion (A): The electrical conductivity of an alloy is less than that-pure-metals.

Reason (R): An alloy is prepared by mixing the metals in molten form.

[A] Both A and R are True and R is the correct explanation of A.

[B] Both A and R are True and R is NOT the correct explanation of A.

[C] A is True but R is false

[D] A is False but R is true.

34. Assertion (A): Glomerular filtration requires expenditure of energy by kidney.

Reason (R): It occurs due to pressure difference in Glomerular capillaries and Bowman's capsule.

[A] Both A and R are True and R is the correct explanation of A.

[B] Both A and R are True and R is NOT the correct explanation of A.

[C] A is True but R is false

[D] A is False but R is true.

35. Assertion (A): Property of converging lens does not remain same in all media.

Reason (R): Property of lens whether the ray is diverging or converging is independent of the surrounding medium.

[A] Both A and R are True and R is the correct explanation of A.

[B] Both A and R are True and R is NOT the correct explanation of A.

[C] A is True but R is false

[D] A is False but R is true.

36. What happens when calcium is treated with water?

(i) It does not react with water.

(ii) It reacts violently with water.

(iii) It reacts less violently with water.

(iv) Bubbles of hydrogen gas formed stick to the surface of calcium.

[A] (i) and (iv)

[B] (ii) and (iii)

[C] (i) and (ii)

[D] (iii) and (iv)

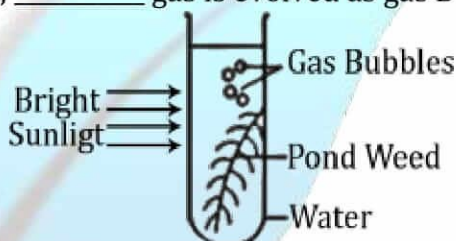
37. The correct sequence of circulation of blood in the human body is:

- [A] Lungs → Pulmonary vein → Left ventricle → Left atrium → Aorta → Body Organs → Vena Cava → Right Ventricle → Right atrium → Pulmonary artery → Lungs.
- [B] Lungs → Pulmonary vein → Left atrium → Left ventricle → Aorta → Body organs → Vena cava Right atrium → Right ventricle → Pulmonary artery → Lungs.
- [C] Lungs → Left atrium → Left ventricle → Body organs → Vena cava → Right atrium → Right ventricle → Pulmonary artery → Pulmonary vein → Aorta → Lungs.
- [D] Lungs → Pulmonary artery → Pulmonary vein → Body organs → Vena cava → Right atrium → Right ventricle → Aorta → Left ventricle → Left atrium → Lungs.

38. Which of these statements is correct about peristaltic movement?

- [A] It is the contraction and expansion of lungs.
- [B] It is the contraction and expansion of walls of food pipe.
- [C] It is the movement of limbs while walking.
- [D] It is the movement of blood throughout the body.

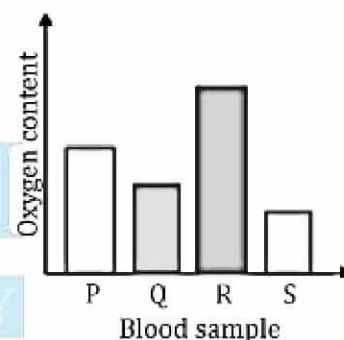
39. In the given experiment set up, _____ gas is evolved as gas Bubbles in the test tube.



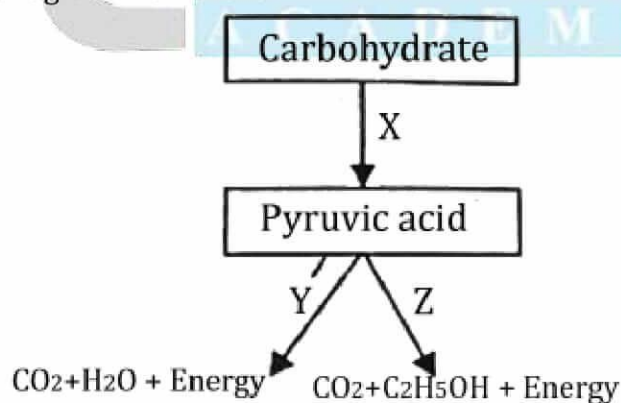
- [A] Oxygen
- [B] Carbon dioxide
- [C] Nitrogen
- [D] Hydrogen

40. The blood sample _____ is most probably from a pulmonary artery.

- [A] P
- [B] Q
- [C] R
- [D] S



41. Identify "Y" and "Z" in the given flow chart.



The process X occurs in _____ and Y occurs in _____ part of cell.

- [A] Mitochondria and cytoplasm respectively.
- [B] Cytoplasm and mitochondria respectively.
- [C] Both takes place in cytoplasm.
- [D] Both takes place in mitochondria.

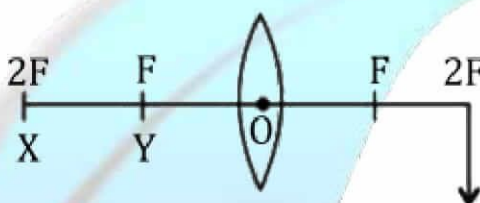
42. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is

- [A] – 30 cm [B] – 20 cm
[C] – 40 cm [D] – 60 cm

43. A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

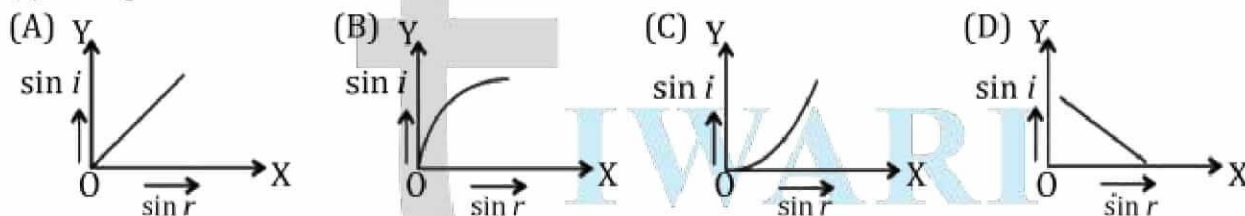
- [A] Plane, convex, and concave.
[B] Convex, concave, and plane.
[C] Concave, plane, and convex.
[D] Convex, plane, and concave.

44. At which position, the object is needed to be placed to produce an image by a convex lens, at the position shown in the figure?



- [A] Between "Y" and "O" [B] Between "X" and "Y"
[C] At "Y" [D] At "X"

45. The correct graphical relation between sine of angle of incidence (i) and sine of angle of refraction (r) for a given medium is:



46. Which of the following is not correct?

- [A] Light is an Electromagnetic wave.
[B] Light travels in a straight line.
[C] Light is a transverse wave.
[D] Light is a longitudinal wave.

47. The laws of reflection hold well for:

- [A] Plane mirror only.
[B] Concave mirror only.
[C] Convex mirror only.
[D] All Mirrors irrespective of their shape.

48. Which of the following statement is incorrect about ionic compounds?

- [A] Ionic compounds are brittle.
[B] Ionic compounds have high melting and boiling points.
[C] Ionic compounds are insoluble in water.
[D] A solution of ionic compound can conduct electricity.

SECTION – C

Section - C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.

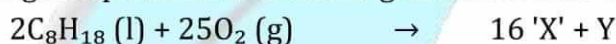
The first attempted 10 questions would be evaluated.

Case – 1:

Chemistry in Automobiles:



For an internal combustion engine to move a vehicle down the road, it must convert the energy stored in the fuel into mechanical energy to drive the wheels. In your car, the distributor and battery provide this starting energy by creating an electrical “spark”, which helps in combustion of fuels like gasoline. Below is the reaction depicting complete combustion of gasoline in full supply of air:



49. Which of the following are the products obtained from the reaction mentioned in the above case?

	Product 'X'	Product 'Y'
[A]	CO_2	H_2O_2
[B]	H_2O	CO
[C]	CH_3OH	H_2O
[D]	CO_2	H_2O

50. Identify the types of chemical reaction occurring during the combustion of fuel:

- [A] Oxidation & Endothermic reaction.
- [B] Decomposition & Ex reaction.
- [C] Oxidation & Exothermic reaction.
- [D] Combination & Endothermic reaction.

51. On the basis of evolution/absorption of energy, which of the following processes are similar to combustion of fuel?

- (i) Photosynthesis in plants.
- (ii) Respiration in the human body.
- (iii) Decomposition of vegetable matter.
- (iv) Decomposition of ferrous sulphate.

- [A] (ii) and (iii)
- [C] (iii) and (iv)

- [B] (i) and (ii)
- [D] (ii) and (i)

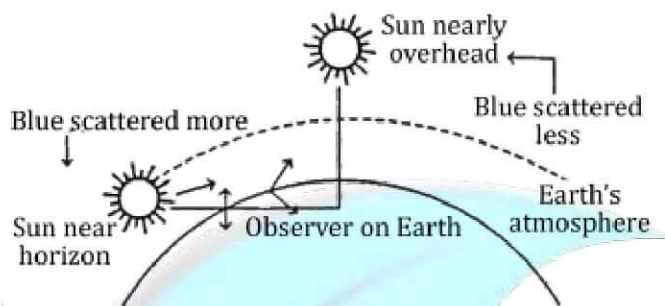
52. A student while walking on the road observed that a cloud of black smoke belched out from the exhaust stack of moving trucks on the road. Choose the correct reason for the production of black smoke:

- [A] Limited supply of real leads to incomplete combustion of fuel.
- [B] Rich supply of air leads to complete combustion of fuel.
- [C] Rich supply of air leads to a combination reaction.
- [D] Limited supply of air leads to complete combustion of fuel.

Case – 2:

At sunrise and sunset, the Sun and the sky appear red. Light from the Sun near the horizon passes through thicker layers of air and covers larger distance in the atmosphere before reaching our eyes. Near the horizon, most of the blue light and shorter wavelengths light rays are scattered away by the particles. Therefore, the light that reaches our eyes is of longer wavelengths. This gives rise to the reddish appearance of the Sun and the sky.

However, at the noon, the light from the Sun overhead would travel relatively shorter distance. So, it appears white as only a little of the blue and violet colours are scattered.



53. To an astronaut in a spaceship, the colour of earth appears

- [A] Red
- [C] White

- [B] Blue
- [D] Black

54. At the time of sunrise and sunset, the light from the sun has to travel

- [A] Longest distance of atmosphere.
- [C] Both (a) and (b)

- [B] Shortest distance of atmosphere.
- [D] None of these.

55. The colour of sky appears blue, it is due to the

- [A] Refraction of light through the atmosphere.
- [C] Scattering of light by air molecule.

- [B] Dispersion of light by air molecule.
- [D] All of the above.

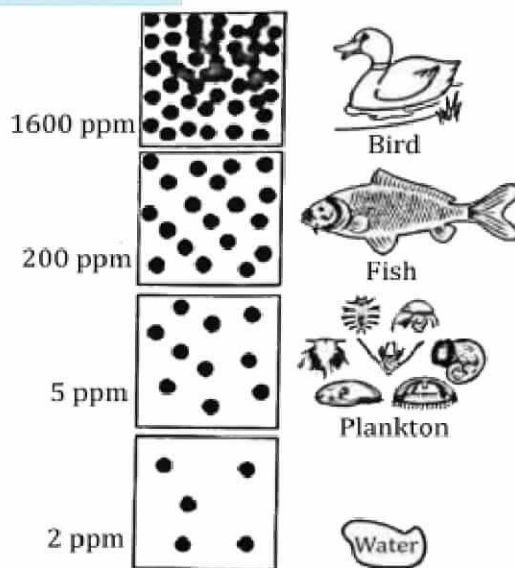
56. At the time of sunrise and sunset

- [A] Blue colour scattered and red colour reaches our eye.
- [B] Red colour scattered and blue colour reaches our eye.
- [C] Green and blue scattered and orange reaches our eye.
- [D] None of the above.

Case – 3:

Toxic substances move up the food chain and become more concentrated at each level. These substances are often pollutants from industries or pesticides from farming. Consider any small fish that eats plankton that has been tainted with mercury.

Hundreds of small fish might then contain just few parts of the mercury, not enough to cause major harm. A bird then might eat hundreds of the small fish, so that now instead of 200 ppm in a single fish, that bird has much higher levels of mercury. The toxin amplifies as it moves up the food chain. The amount of mercury is measured in ppm, which means “parts per million”.



57. The phenomenon when concentrations of a harmful substance increases in organisms at higher trophic levels in a food chain or food web is:

[A] Artificial eutrophication.

[B] Biological accumulation.

[C] Biological magnification.

[D] Biological pollution.

58. The table below gives the organism in a food web containing the lowest and highest concentration of harmful chemical pollutants. Select the correct answer:

	Lowest Concentration	Highest Concentration
[A]	Primary Consumers	Secondary Consumers
[B]	Tertiary Consumers	Producers
[C]	Producers	Secondary Consumers
[D]	Producers	Tertiary Consumers

59. Which of the following statements are incorrect?

(i) Non-biodegradable biological in origin.

(ii) Biodegradable wastes are degraded by microorganisms such as bacteria and fungi.

(iii) Biodegradable wastes enter the food chain and get biologically magnified.

(iv) Non-biodegradable absorbed by plants from the soil.

[A] Both (i) and (ii)

[B] Both (i) and (iii)

[C] Both (ii) and (iii)

[D] Both (iii) and (iv)

60. It was observed that at places where DDT was used to control mosquitoes and other pests, the eggs of eagles would become fragile and break and the eagle almost became extinct. After DDT was banned by lawmakers, eagle population has recovered.

The possible reason for this is:

[A] DDT is non-biodegradable and hence found in largest concentration in tertiary consumers.

[B] DDT is non-biodegradable and found in largest concentration in producers.

[C] Largest concentration of DDT is found in secondary consumers on which eagle feeds.

[D] DDT is a strong chemical which makes the eggs fragile.

