

# Union Public Service Commission

## Civil Services Preliminary Examination

### General Science

#### Questions Asked In Previous Years' Exams

1. Consider the following statements :
1. Non-function of lachrymal gland is an important symptom of deficiency of Vitamin A.
  2. Deficiency of Vitamin B<sub>1</sub> can lead to indigestion and heart enlargement.
  3. Vitamin C deficiency can lead to pain in the muscles.
  4. Deficiency of Vitamin D causes increased loss of Ca<sup>++</sup> in urine.
- Which of the statements given above are correct ?

- (a) 1 and 2                      (b) 2, 3 and 4  
(c) 1, 3 and 4                      (d) 1, 2, 3 and 4  
(CSE 2004)

2. The hormone insulin is a
- (a) Glycolipid                      (b) Fatty acid  
(c) Peptide                              (d) Sterol  
(CSE 2004)

3. Consider the following statements :
1. Toothless mammals such as pangolins are not found in India.
  2. Gibbon is the only ape found in India.

- 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  
(CSE 2004)

4. In which organ of the human body are the lymphocyte cells formed ?
- (a) Liver                              (b) Long bone  
(c) Pancreas                              (d) Spleen  
(CSE 2004)

5. Consider the following statements :
1. Adam Osborne produced the first portable computer.
  2. Ian Wilmut created the first cloned sheep.

- 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  
(CSE 2004)

6. Consider the following statements :
1. Baking soda is used in fire extinguishers.
  2. Quicklime is used in the manufacture of glass.
  3. Gypsum is used in the manufacture of Plaster of Paris.

- Which of the statements given above is/are correct ?
- (a) 1 and 2                              (b) 2 and 3  
(c) 1 only                              (d) 1, 2 and 3  
(CSE 2004)

**Directions:** The following questions consists of two statements : one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answers to these questions using the codes given below :

(a) Both A and R are individually true and R is the correct explanation of A

(b) Both A and R are individually true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

7. **Assertion (A) :**

In our houses, the current in AC electricity line changes direction 60 times per second.

**Reason (R) :**

The frequency of alternating voltage supplied is 60 hertz.

(CSE 2004)

8. **Assertion (A) :**

Fatty acids should be a part of the balanced human diet.

**Reason (R) :**

The cells of the human body cannot synthesize any fatty acids.

(CSE 2004)

9. Which of the following pairs is **not** correctly matched ?

- (a) Reinhold Messner : Computer Technology  
(b) Harlow Shapley : Astronomy  
(c) Gregor Mendel : Hereditary Theory  
(d) Godfrey Hounsfield : CT Scan  
(CSE 2004)

10. A car is running on a road at a uniform speed of 60 km/hr. The net resultant force on the car is

- (a) Driving force in the direction of car's motion  
(b) Resistance force opposite to the direction of car's motion  
(c) An inclined force  
(d) Equal to zero  
(CSE 2004)

11. The research work of Paul Lauterbur and Peter Mansfield, the Nobel Prize winners for Medicine in 2003, relates to

- (a) The control of AIDS  
(b) Magnetic resonance imaging

- (c) Respiratory diseases  
(d) Genetic engineering  
(CSE 2004)

12. Match List I (Fuel Gases) with List II (Major Constituents) and select the correct answer using the codes given below the Lists :

List I (Fuel Gases)	List II (Major Constituents)
A. CNG	1. Carbon monoxide, Hydrogen
B. Coal gas	2. Butane, Propane
C. LPG	3. Methane, Ethane
D. Water gas	4. Hydrogen, Methane, Carbon monoxide

Codes :

	A	B	C	D
(a)	2	1	3	4
(b)	3	4	2	1
(c)	2	4	3	1
(d)	3	1	2	4

(CSE 2004)

13. A spherical body moves with a uniform angular velocity  $\omega$  around a circular path of radius r. Which one of the following statements is correct ?

- (a) The body has no acceleration  
(b) The body has a radial acceleration  $\omega^2 r$  directed towards the centre of the path  
(c) The body has a radial acceleration  $2/5\omega^2 r$  directed away from the centre of the path  
(d) The body has an acceleration  $\omega^2 r$  tangential to its path  
(CSE 2004)

14. A weightless rubber balloon is filled with 200 cc of water. Its weight in water is equal to

- (a)  $\frac{9.8}{5}$  N                              (b)  $\frac{9.8}{10}$  N  
(c)  $\frac{9.8}{2}$  N                              (d) Zero  
(CSE 2004)

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15. Salts of which of the following elements provide colours to fireworks ?

- (a) Zinc and sulphur
- (b) Potassium and mercury
- (c) Strontium and barium
- (d) Chromium and nickel

(CSE 2004)

16. Consider the following statements :

1. Femur is the longest bone in the human body.
2. Cholera is a disease caused by bacteria.
3. 'Athlete's foot' is a disease caused by virus.

Which of the statements given above are correct ?

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

(CSE 2004)

17. Consider the following statements :

1. Smart Card is a plastic card with an embedded microchip.
2. Digital technology is primarily used with new physical communication medium such as satellite and fibre optics transmission.
3. A digital library is a collection of documents in an organised electronic form available on the Internet only.

Which of the statements given above is/are correct ?

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

(CSE 2004)

18. With reference to ionic compounds, consider the following statements :

1. Ionic compounds are insoluble in alcohol.
2. Ionic compounds in the solid state are good conductors of electricity.

Which of these statements is/are correct ?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

(CSE 2003)

19. Which of the following statements is *not* correct ?

- (a) The presence of NaCl increases the rate of setting of Plaster of Paris
- (b) Gypsum is added to the cement to slow down its rate of setting
- (c) All alkaline earth metals form hydrated salts
- (d) Barium and Strontium are found free in nature

(CSE 2003)

20. Octopus is

- (a) An arthropod
- (b) An echinoderm
- (c) A hemichordate
- (d) A mollusc

(CSE 2003)

21. Consider the following conditions of a sick human body :

1. Swollen lymph nodes
2. Sweating at night
3. Loss of memory
4. Loss of weight

Which of these are the symptoms of AIDS ?

- (a) 1 and 2
- (b) 2, 3 and 4
- (c) 1, 3 and 4
- (d) 1, 2, 3 and 4

(CSE 2003)

22. Regarding the atom of a chemical element, the magnetic quantum number refers to

- (a) Orientation
- (b) Shape
- (c) Size
- (d) Spin

(CSE 2003)

23. Consider the following statements :

1. The common blue green algae *Spirogyra* and *Ulothrix* are found in both fresh water ponds and oceans.

2. The chameleon can look ahead with one eye, and at the same time look behind with another.

Which of these statements is/are correct ?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

(CSE 2003)

**Directions :** The following items consist of two statements: one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answers to these items using the codes given below :

(a) Both A and R are individually true and R is the correct explanation of A

(b) Both A and R are individually true but R is *not* the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

24. **Assertion (A) :**

In the periodic table of chemical elements, electron affinity is always found to increase from top to bottom in a group.

**Reason (R) :**

In a group, the atomic radii generally increase from top to bottom.

(CSE 2003)

25. **Assertion (A) :**

Coal-based thermal power stations contribute to acid-rain.

**Reason (R) :**

Oxides of carbon are emitted when coal burns.

(CSE 2003)

26. **Assertion (A) :**

Unsaturated fats are more reactive compared with the saturated fats.

**Reason (R) :**

Unsaturated fats have only single bonds in their structure.

(CSE 2003)

27. If the radius of the earth were to shrink by one percent, its mass remaining the same, the value of 'g' on the earth's surface would

- (a) Increase by 0.5%
- (b) Increase by 2%
- (c) Decrease by 0.5%
- (d) Decrease by 2%

(CSE 2003)

28. With reference to the work of human kidney, consider the following statements :

1. After the waste is removed in the kidney, the cleaner blood is sent back through renal artery.

2. From Bowman's capsule, the filtered liquid passes through tiny tubes where much of the glucose is reabsorbed and sent back to the blood in the renal vein.

Which of these statements is/are correct ?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

(CSE 2003)

29. A hydrogen-inflated polythene balloon is released from the surface of the earth. As the balloon rises to an altitude up in the atmosphere, it will

- (a) Decrease in size
- (b) Flatten into a disc-like shape
- (c) Increase in size
- (d) Maintain the same size and shape

(CSE 2003)

30. Consider the following statements:

1. Steam at 100°C and boiling water at 100°C contain same amount of heat.

2. Latent heat of fusion of ice is equal to the latent heat of vaporisation of water.

3. In an air-conditioner, heat is extracted from the room-air at the evaporator coils and is rejected out at the condenser coils.

Which of these statements is/are correct ?

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

(CSE 2003)

31. Consider the following statements:

1. Molasses is a by-product of sugar production process.

2. Bagasse obtained in the sugar mills is used as a fuel in the boilers to generate steam for the sugar factories.

3. Sugar can only be produced from sugarcane as the raw material.

Which of these statements are correct ?

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

(CSE 2003)

32. Consider the following statements: A 4-wheel vehicle moving in a sharp circular path at high speed will

1. Overturn about its outer wheels.
2. Overturn about its inner wheels.
3. Skid outwards.
4. Skid inwards.

Which of these statements are correct ?

- (a) 1 and 3
- (b) 2 and 4
- (c) 2 and 3
- (d) 1 and 4

(CSE 2003)

33. Which one of the following statements is correct ?

- (a) Liquid Sodium is employed as a coolant in nuclear reactors
- (b) Calcium carbonate is an ingredient of tooth paste
- (c) Bordeaux mixture consists of Sodium sulphate and lime
- (d) Zinc amalgams are used as a dental filling

(CSE 2003)

34. Diffusion of light in the atmosphere takes place due to

- (a) Carbon dioxide
- (b) Dust particles
- (c) Helium
- (d) Water vapours

(CSE 2003)

35. An oil tanker is partially filled with oil and moves forward on a level road with uniform acceleration. The free surface of oil then

- (a) remains horizontal
- (b) is inclined to the horizontal with smaller depth at the rear end
- (c) is inclined to the horizontal with larger depth at the rear end
- (d) assumes parabolic curve

(CSE 2003)

36. Consider the following statements: The purpose of adding sodium sulphate and sodium silicate to the detergent in a washing powder is

- 1. To keep the washing powder dry.
- 2. To maintain the alkalinity of the powder.

Which of these statements is/are correct ?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

(CSE 2003)

37. Which one of the following statements is *not* correct ?

- (a) Milk contains none of the B-vitamins
- (b) Vitamin-A (retinol) deficiency leads to dry and scaly skin
- (c) One of the symptoms of scurvy is pain in the joints
- (d) Vitamin-B<sub>1</sub> (thiamine) deficiency can lead to heart failure

(CSE 2003)

38. Which one of the following statements is *not* correct ?

- (a) The velocity of sound in air increases with the increase of temperature
- (b) The velocity of sound in air is independent of pressure
- (c) The velocity of sound in air decreases as the humidity increases
- (d) The velocity of sound in air is not affected by the change in amplitude and frequency

(CSE 2003)

39. Which one of the following is produced during the formation of photochemical smog ?

- (a) Hydrocarbons
- (b) Nitrogen Oxides
- (c) Ozone
- (d) Methane

(CSE 2003)

40. With reference to normal human beings, consider the following statements :

1. In response to the presence of HCl, secretin is produced from the duodenum.

2. Enterogastrone is produced in the small intestine in response to the presence of fatty acids.

Which of these statements is/are correct ?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

(CSE 2003)

41. Which one of the following statements is *not* correct ?

- (a) All echinoderms are viviparous
- (b) Roundworm has no circulatory system
- (c) In bony fishes, swim bladder is usually present
- (d) In cartilaginous fishes, fertilisation is internal

(CSE 2002)

42. Match List I (Scientists) with List II (Achievements) to select the correct answer using the codes given below the lists :

List I (Scientists)	List II (Achievements)
A. Arber and Smith	1. Developed transgenic plants with Agrobacterium T-DNA
B. Feldman	2. Discovered endonucleases
C. Mullis	3. Discovered reverse transcriptase
D. Temin and Baltimore	4. Discovered polymerase chain reaction

A	B	C	D
(a) 2	1	4	3
(b) 1	2	4	3
(c) 2	1	3	4
(d) 1	2	3	4

(CSE 2002)

43. Which one of the following statements is correct ?

- (a) Prions are the smallest free-living cells
- (b) The cell wall of Mycoplasmas is made up of amino sugars
- (c) Viroids consist of a single-stranded RNA molecule
- (d) Rickettsias lack cell wall

(CSE 2002)

**Directions :** The following items consist of two statements, one labelled as the "Assertion A" and the other as "Reason R". You are to examine these two statements carefully and decide if the "Assertion A" and the "Reason R" are individually true and if so, whether the "Reason R" is the correct explanation for the given "Assertion A". Select your answers to these items using the codes given below :

(a) Both A and R are individually true and R is the correct explanation of A

(b) Both A and R are individually true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

44. **Assertion (A) :** Drinking of whisky increases the frequency of urination.

**Reason (R) :** Alcohol intake speeds up the secretion of vasopressin in the body.

(CSE 2002)

45. **Assertion (A) :** With the increase of temperature, the viscosity of glycerine increases.

**Reason (R) :** Rise of temperature increases kinetic energy of the molecules.

(CSE 2002)

46. **Assertion (A) :** Synthetic detergents can lather well in hard water.

**Reason (R) :** Synthetic detergents form soluble calcium and magnesium salts with hard water.

(CSE 2002)

47. **Assertion (A) :** Artificial satellites are always launched from the earth in the eastward direction.

**Reason (R) :** The earth rotates from west to east and so the satellite attains the escape velocity.

(CSE 2002)

48. **Assertion (A) :** Human diet should compulsorily contain Glycine, Serine and Tyrosine.

**Reason (R) :** Essential amino acids cannot be synthesised in the human body.

(CSE 2002)

49. **Assertion (A) :** An iron ball floats on mercury but gets immersed in water.

**Reason (R) :** The specific gravity of iron is more than that of mercury.

(CSE 2002)

50. With reference to the latest developments in stem cell research, consider the following statements :

- 1. The only source of human stem cells are the embryos at blastocyst stage
- 2. The stem cells can be derived without causing destruction to blastocysts.
- 3. The stem cells can regenerate themselves in *vitro*, virtually forever.
- 4. Indian research centres also created a few cell lines which can be developed into many types of tissues.

Which of these statements are correct ?

- (a) 1, 2, 3 and 4
- (b) 1, 2 and 3
- (c) 1, 2 and 4
- (d) 3 and 4

(CSE 2002)

51. Among living organisms, which one of the following is the most responsible factor for bringing about the origin of a new species ?

- (a) Isolation  
(b) Mutation  
(c) Natural Selection  
(d) Sexual Reproduction

(CSE 2002)

52. Ticks and mites are actually

- (a) Arachnids (b) Crustaceans  
(c) Insects (d) Myriapods

(CSE 2002)

53. With reference to the blood in a normal person, which one of the following statements is correct ?

- (a) Compared to arteries, veins are less numerous and hold less of the body's blood at any given time  
(b) Blood cells constitute about 70 percent of the total volume of the blood  
(c) White Blood Cells (WBC) are made by lymph nodes only  
(d) The blood has more platelets than WBC

(CSE 2002)

54. Which one of the following statements is correct with reference to our solar system ?

- (a) The Earth is the densest of all the planets in our solar system  
(b) The predominant element in the composition of the Earth is silicon  
(c) The Sun contains 75 percent of the mass of the solar system  
(d) The diameter of the Sun is 190 times that of the Earth

(CSE 2002)

55. Which one of the following statements is *not* correct ?

- (a) The boiling point of an aqueous solution is higher than that of pure water  
(b) Addition of solutes to a solution causes an increase in its water potential  
(c) The vapour pressure of the water in a solution is lower than that of pure water  
(d) When a solution is separated from water by a semi-permeable membrane, water movement can be prevented by applying pressure to the solution

(CSE 2002)

56. Consider the following plants :

1. Bougainvillea 2. Carnations  
3. Cocoa 4. Grapes

Which of these plants are propagated by stem cuttings ?

- (a) 1 and 2 (b) 2, 3 and 4  
(c) 1, 3 and 4 (d) 1, 2, 3 and 4

(CSE 2002)

57. Consider the following natural phenomena :

1. Terrestrial heating  
2. Reflection of light  
3. Refraction of light  
4. Diffraction of light

Due to which of these phenomena is mirage formed ?

- (a) 1 and 2 (b) 2, 3 and 4  
(c) 1 and 3 (d) 4 only

(CSE 2002)

58. In the context of organic evolution, the loss of limbs of snakes is explained by the phenomenon of

- (a) Use and disuse of organs  
(b) Adaptation to living in burrows  
(c) Natural selection  
(d) Inheritance of acquired characters

(CSE 2002)

59. Match List I (Oxidation numbers) with List II (The elements) to select the correct answer using the codes given below the lists:

List I (Oxidation numbers)		List II (The elements)	
A. 2		1. Oxidation number of Mn in $MnO_2$	
B. 3		2. Oxidation number of S in $H_2S_2O_7$	
C. 4		3. Oxidation number of Ca in CaO	
D. 6		4. Oxidation number of Al in $NaAlH_4$	
	A B C D		
(a) 3	4 1 2		
(b) 4	3 1 2		
(c) 3	4 2 1		
(d) 4	3 2 1		

(CSE 2002)

60. Foot-and-Mouth disease in animals, a current epidemic in some parts of the world, is caused by

- (a) Bacterium (b) Fungus  
(c) Protozoan (d) Virus

(CSE 2002)

61. When one gene controls two or more different characters simultaneously, the phenomenon is called

- (a) Apomixis (b) Pleiotropy  
(c) Polyploidy (d) Polyteny

(CSE 2002)

62. With reference to the human body, consider the following statements:

1. The production of somatotropin goes up when a person exercises.  
2. Men's testes produce progesterone.  
3. Women's adrenal glands secrete testosterone.  
4. Stress causes the adrenals to release very less amount of cortisol than usual.

Which of these statements are correct ?

- (a) 1, 2, 3 and 4 (b) 1, 2 and 3  
(c) 2, 3 and 4 (d) 1 and 4

(CSE 2002)

63. Consider the following statements:

1. Light of longer wavelength is scattered much more than the light of shorter wavelength.  
2. The speed of visible light in water is 0.95 times the speed in vacuum.

3. Radio waves are produced by rapidly oscillating electrical currents.

4. To detect the overspeeding vehicles, police use the Doppler effect of reflected short radio waves.

Which of these statements are correct ?

- (a) 1 and 2 (2) 1 and 3  
(c) 2 and 4 (d) 3 and 4

(CSE 2002)

64. Which one of the following is monogamous ?

- (a) Wolf (b) Walrus  
(c) Seal (d) Deer

(CSE 2002)

65. Which one of the following is the correct sequence in increasing order of molecular weights of the hydrocarbons ?

- (a) Methane, ethane, propane and butane  
(b) Propane, butane, ethane and methane  
(c) Butane, ethane, propane and methane  
(d) Butane, propane, ethane and methane

(CSE 2001)

66. Which organelle in the Cell, other than nucleus, contains DNA ?

- (a) Centriole (b) Golgi apparatus  
(c) Lysosome (d) Mitochondrion

(CSE 2001)

67. Match List I with List II and select the correct answer using the codes given below the Lists :

List I (Achievement in Genetics)		List II (Scientists)	
A. Discovery of transduction and conjugation in bacteria		1. Khurana	
B. Establishing the sex-linked inheritance		2. Kornberg	
C. Isolation of DNA polymerase from <i>E. Coli</i>		3. Lederberg	
D. Establishing the complete genetic code		4. Morgan	
	A B C D	5. Ochoa	
(a) 4	3 2 1		
(b) 3	4 1 5		
(c) 4	3 1 5		
(d) 3	4 2 1		

(CSE 2001)

68. "Athlete's Foot" is a disease caused by

- (a) Bacteria (b) Fungus  
(c) Protozoan (d) Nematode

(CSE 2001)

69. In the eye donation, which part of the eye is transplanted from the donor ?

- (a) Cornea (b) Lens  
(c) Retina (d) The whole eye

(CSE 2001)

70. A man whose blood group is not known meets with a serious accident and needs blood transfusion immediately. Which one of the blood groups mentioned below and readily available in the hospital will be safe for transfusion ?

- (a) O, Rh- (b) O, Rh+  
(c) AB, Rh- (d) AB, Rh+

(CSE 2001)

71. Cloudy nights are warmer as compared to clear cloudless nights, because clouds

- (a) Prevent cold waves from the sky from descending on earth  
(b) Reflect back the heat given off by earth  
(c) Produce heat and radiate it towards earth  
(d) Absorb heat from the atmosphere and send it towards earth

(CSE 2001)

72. "Metastasis" is the process by which

- (a) Cells divide rapidly under the influence of drugs  
(b) Cancer cells spread through the blood or lymphatic system to other sites or organs  
(c) The chromosomes in cell nuclei are attached to the spindle before moving to the anaphase poles  
(d) Cancer cells are successfully inhibited to divide any further

(CSE 2001)

73. Who is the scientist in whose honour the "Chandra" X-ray telescope has been named ?

- (a) Chandrasekhar Venkat Raman  
(b) Jagdish Chandra Bose  
(c) Prafulla Chandra Roy  
(d) Subrahmanyan Chandrasekhar

(CSE 2001)

74. The mass of a body on earth is 100 kg (acceleration due to gravity,  $g = 10 \text{ m/s}^2$ ). If acceleration due to

gravity on the moon is  $\left(\frac{g_e}{6}\right)$ , then the mass of the body on the moon is

- (a)  $\frac{100}{6}$  kg (b) 60 kg  
(c) 100 kg (d) 600 kg

(CSE 2001)

75. In an atom, the order of filling up of the orbitals is governed by

- (a) Aufbau principle  
(b) Heisenberg's uncertainty principle  
(c) Hund's rule  
(d) Pauli's exclusion principle

(CSE 2001)

76. An aqueous solution of copper sulphate is acidic in nature because the salt undergoes

- (a) Dialysis (b) Electrolysis  
(c) Hydrolysis (d) Photolysis

(CSE 2001)

77. Consider the following statements : A simple pendulum is set into oscillation. Then

- The acceleration is zero when the bob passes through the mean position.
- In each cycle the bob attains a given velocity twice.
- Both acceleration and velocity of the bob are zero when it reaches its extreme position during its oscillation.
- The amplitude of oscillation of the simple pendulum decreases with time.

Which of these statements are correct

- (a) 1 and 2 (b) 3 and 4  
(c) 1, 2 and 4 (d) 2, 3 and 4

(CSE 2001)

78. Consider the following statements with reference to the Periodic Table of chemical elements :

- Ionisation potential gradually decreases along a period.
- In a group of elements, electron affinity decreases as the atomic weight increases.
- In a given period, electronegativity decreases as the atomic number increases.

Which of these statement(s) is/are correct ?

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

(CSE 2001)

79. Match List I with List II and select the correct answer using the codes given below the Lists :

List I (Substances)	List II (Physiological role)
A. Ptyalin	1. Converts angiotensinogen in blood into angiotensin
B. Pepsin	2. Digests starch
C. Renin	3. Digests proteins
D. Ocytocin	4. Hydrolyses fats
	5. Induces contraction of smooth muscles

	A	B	C	D
(a)	2	3	1	5
(b)	3	4	2	5
(c)	2	3	5	1
(d)	3	1	2	4

(CSE 2001)

80. Epiphytes are plants which depend on other plants for

- (a) Food (b) Mechanical support  
(c) Shade (d) Water

(CSE 2001)

81. Antigen is a substance which

- (a) Destroys harmful bacteria  
(b) Is used to treat poisoning  
(c) Lowers body temperature  
(d) Stimulates formation of antibody

(CSE 2001)

82. Which of the following features of DNA makes it uniquely suited to store and transmit genetic information from generation to generation ?

- (a) Complementarity of the two strands

- (b) Double helix  
(c) Number of base-pairs per turn  
(d) Sugar-phosphate backbone

(CSE 2001)

83. Two wires have their lengths, diameters and resistivities, all in the ratio of 1 : 2. If the resistance of the thinner wire is 10 ohms, then the resistance of the thicker wire is

- (a) 5 ohms (b) 10 ohms  
(c) 20 ohms (d) 40 ohms

(CSE 2001)

84. Which of the following cell organelles play the most significant role in protein synthesis ?

- (a) Lysosome and Centrosome  
(b) Endoplasmic Reticulum and Ribosome  
(c) Golgi Apparatus and Mitochondria  
(d) Lysosome and Mitochondria

(CSE 2001)

**Directions :** The following questions consist of two statements, one labelled as the 'Assertion A' and the other labelled as the 'Reason R'. You are to examine these two statements carefully and decide if the 'Assertion A' and the 'Reason R' are individually true and if so, whether the 'Reason R' is the correct explanation for the 'Assertion A'. Select your answer to each of these questions using the codes given below.

(a) Both A and R are individually true and R is the correct explanation of A.

(b) Both A and R are individually true but R is not a correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

85. **Assertion (A) :** A piece of copper and a piece of glass are heated to the same temperature. When touched, thereafter, the copper piece appears hotter than the glass piece.

**Reason (R) :** The density of copper is more than that of glass.

(CSE 2001)

86. **Assertion (A) :** A chemical reaction becomes faster at higher temperatures.

**Reason (R) :** At higher temperatures, molecular motion becomes more rapid.

(CSE 2001)

87. **Assertion (A) :** The boiling point of water decreases as the altitude increases.

**Reason (R) :** The atmospheric pressure increases with altitude.

(CSE 2001)

88. **Assertion (A) :** Scientists can cut apart and paste together DNA molecules at will, regardless of the source of the molecules.

**Reason (R) :** DNA fragments can be manipulated using restriction endonucleases and DNA ligases.

(CSE 2001)

89. Which one of the following is not radioactive ?

- (a) Astatine (b) Francium  
(c) Tritium (d) Zirconium  
(CSE 2001)

90. The American multinational company, Monsanto, has produced an insect-resistant cotton variety that is undergoing field-trials in India. A toxin gene from which one of the following bacteria has been transferred to this transgenic cotton ?

- (a) *Bacillus subtilis*  
(b) *Bacillus thuringiensis*  
(c) *Bacillus amyloliquifaciens*  
(d) *Bacillus globuli*  
(CSE 2001)

91. When lightwaves pass from air to glass, the variables affected are

- (a) Wavelength, frequency and velocity  
(b) Velocity and frequency  
(c) Wavelength and frequency  
(d) Wavelength and velocity  
(CSE 2001)

92. When water is heated from 0°C to 10°C, its volume

- (a) Increases (b) Decreases  
(c) Does not change  
(d) First decreases and then increases  
(CSE 2001)

93. The cellular and molecular control of programmed cell death is known as

- (a) Apoptosis (b) Ageing  
(c) Degeneration (d) Necrosis  
(CSE 2001)

94. Consider the following statements : In a nuclear reactor, self-sustained chain reaction is possible, because

1. More neutrons are released in each of the fission reactions.
2. The neutrons immediately take part in the fission process.
3. The fast neutrons are slowed down by Graphite.
4. Every neutron released in the fission reaction initiates further fission.

Which of these statements are correct ?

- (a) 1, 2 and 3 (b) 1 and 3  
(c) 2 and 4 (d) 2, 3 and 4  
(CSE 2001)

95. Match List I with List II and select the correct answer using the codes given below the Lists :

List I (Bones)		List II (Names)	
A. Breast-bone		1. Clavicle	
B. Collar-bone		2. Patella	
C. Knee-cap		3. Scapula	
D. Shoulder blade		4. Sternum	
A	B	C	D
(a) 4	1	3	2
(b) 1	4	3	2
(c) 1	4	2	3
(d) 4	1	2	3

(CSE 2001)

96. Consider the following statements :

1. Tapeworm is a hermaphrodite.
2. Round-worm has separate sexes.
3. Filaria is caused by a nematode.

4. Guinea-worm is an annelid.

Which of these are correct ?

- (a) 1 and 2 (b) 1, 2 and 3  
(c) 3 and 4 (d) 2, 3 and 4  
(CSE 2001)

97. The 'stones' formed in human kidney consist mostly of

- (a) Calcium oxalate  
(b) Sodium acetate  
(c) Magnesium sulphate  
(d) Calcium  
(CSE 2000)

98. Most of the explosions in mines occur due to the mixing of

- (a) Hydrogen with oxygen  
(b) Oxygen with acetylene  
(c) Methane with air  
(d) Carbon dioxide with ethane  
(CSE 2000)

99. Which one of the following organisms can serve as a biofertilizer for rice crop ?

- (a) Blue-green algae (b) *Rhizobium* sp  
(c) Mycorrhizal fungi (d) *Azotobacter* sp  
(CSE 2000)

100. At which stage in its life cycle does the silk worm yield the fibre of commerce ?

- (a) Egg (b) Larva  
(c) Pupa (d) Imago  
(CSE 2000)

101. The blood glucose level is commonly expressed as

- (a) Millimeter of Hg  
(b) Milligram per decilitre  
(c) Parts per million  
(d) Grammes per litre  
(CSE 2000)

102. Phytotron is a facility to

- (a) Grow plants under disease-free conditions  
(b) Conserve endangered species of the plants  
(c) Grow plants under controlled conditions  
(d) Induce mutations  
(CSE 2000)

103. Which one of the following materials is very hard and very ductile ?

- (a) Carborundum (b) Tungsten  
(c) Cast iron (d) Nichrome  
(CSE 2000)

104. Insect-resistant cotton plants have been genetically engineered by inserting a gene from a/an

- (a) Virus (b) Bacterium  
(c) Insect (d) Plant  
(CSE 2000)

105. Soft drinks such as colas contain significant quantities of

- (a) Caffeine (b) Nicotine  
(c) Tannin (d) Renin  
(CSE 2000)

106. Which one of the following does a TV remote control unit use to operate a TV set ?

- (a) Light waves (b) Sound waves  
(c) Microwaves (d) Radio waves  
(CSE 2000)

107. Hybridoma technology is a new biotechnological approach for commercial production of

- (a) Monoclonal antibodies  
(b) Interferon (c) Antibiotics  
(d) Alcohol  
(CSE 2000)

108. The sensation of fatigue in the muscles after prolonged strenuous physical work is caused by

- (a) A decrease in the supply of oxygen  
(b) Minor wear and tear of muscle fibres  
(c) The depletion of glucose  
(d) The accumulation of lactic acid  
(CSE 2000)

109. Aluminium surfaces are often 'anodized'. This means the deposition of a layer of

- (a) Chromium oxide  
(b) Aluminium oxide  
(c) Nickel oxide  
(d) Zinc oxide  
(CSE 2000)

110. Consider the following statements : Hard water is not suitable for

1. Drinking
2. Washing clothes with soap
3. Use in boilers
4. Irrigating crops

Which of these statements are correct ?

- (a) 1 and 3 (b) 2 and 3  
(c) 1, 2 and 4 (d) 1, 2, 3 and 4  
(CSE 2000)

111. A small pouch containing silica gel is often found in bottles of medicine in tablet or powder form because silica gel

- (a) Kills bacteria  
(b) Kills germs and spores  
(c) Absorbs moisture  
(d) Absorbs all gases present inside the bottle  
(CSE 2000)

112. Canola refers to special type of oil seed mustard varieties bred for human consumption. The main characteristic of these varieties is that the

- (a) Seeds have very high oil content  
(b) Oil is rich in unsaturated fatty acids  
(c) Oil has long shelf-life  
(d) Oil has very low Erucic acid content  
(CSE 2000)

113. A noise level of 100 decibels would correspond to

- (a) Just audible sound  
(b) Ordinary conversation  
(c) Sound from a noisy street  
(d) Noise from a machine-shop  
(CSE 2000)

114. A 'black hole' is a body in space which does not allow any radiation to come out. This property is due to its

- (a) Very small size  
(b) Very large size  
(c) Very high density  
(d) Very low density  
(CSE 2000)

**115.** The memory of a computer is commonly expressed in terms of kilobytes or megabytes. A byte is made up of  
 (a) Eight binary digits  
 (b) Eight decimal digits  
 (c) Two binary digits  
 (d) Two decimal digits

(CSE 2000)

**116.** Fluorescent tubes are fitted with a choke. The choke coil  
 (a) Steps up the line voltage  
 (b) Steps down the line voltage  
 (c) Reduces current in the circuit  
 (d) Chokes low frequency currents

(CSE 2000)

**117.** For reproducing sound, a CD (Compact Disc) audio player uses a  
 (a) Quartz crystal  
 (b) Titanium needle  
 (c) Laser beam  
 (d) Barium titanate ceramic

(CSE 2000)

**118.** When a CD (compact disc used in audio and video systems) is seen in sunlight, rainbow like colours are seen. This can be explained on the basis of the phenomenon of

- (a) Reflection and diffraction
- (b) Reflection and transmission
- (c) Diffraction and transmission
- (d) Refraction, diffraction and transmission

(CSE 2000)

**119.** Match List-I (Industrial processes) with List-II (Industry with which associated) and select the correct answer

using the codes given below the lists :

List I		List II	
A. Cracking		1. Rubber	
B. Smelting		2. Petroleum	
C. Hydrogenation		3. Copper	
D. Vulcanization		4. Edible Fats	
A	B	C	D
(a) 3	2	1	4
(b) 2	3	4	1
(c) 2	3	1	4
(d) 3	2	4	1

(CSE 2000)

**120.** Within biological communities, some species are important in determining the ability of a large number of other species to persist in the community. Such species are called

- (a) Keystone species
- (b) Allopatric species
- (c) Sympatric species
- (d) Threatened species

(CSE 2000)

**ANSWERS**

**1.** (b) : Night blindness or nyctalopia is caused by the deficiency of Vitamin 'A'. This vitamin is necessary for the division and growth of epithelial cells.

- |                |                |                |                |
|----------------|----------------|----------------|----------------|
| <b>2.</b> (c)  | <b>3.</b> (b)  | <b>4.</b> (c)  | <b>5.</b> (c)  |
| <b>6.</b> (d)  | <b>7.</b> (c)  | <b>8.</b> (c)  | <b>9.</b> (a)  |
| <b>10.</b> (d) | <b>11.</b> (b) | <b>12.</b> (b) | <b>13.</b> (b) |
| <b>14.</b> (d) | <b>15.</b> (c) | <b>16.</b> (a) | <b>17.</b> (d) |
| <b>18.</b> (c) | <b>19.</b> (c) | <b>20.</b> (d) | <b>21.</b> (c) |
| <b>22.</b> (a) |                |                |                |

**23.** (b) : *Spirogyra* is found in fresh water.

- |                |                |                |                |
|----------------|----------------|----------------|----------------|
| <b>24.</b> (d) | <b>25.</b> (b) | <b>26.</b> (c) | <b>27.</b> (b) |
| <b>28.</b> (b) | <b>29.</b> (d) | <b>30.</b> (d) | <b>31.</b> (a) |
| <b>32.</b> (b) | <b>33.</b> (a) | <b>34.</b> (d) | <b>35.</b> (b) |
| <b>36.</b> (d) | <b>37.</b> (a) | <b>38.</b> (c) | <b>39.</b> (a) |
| <b>40.</b> (b) | <b>41.</b> (a) | <b>42.</b> (a) | <b>43.</b> (c) |
| <b>44.</b> (c) | <b>45.</b> (d) | <b>46.</b> (a) | <b>47.</b> (c) |
| <b>48.</b> (d) | <b>49.</b> (c) | <b>50.</b> (d) | <b>51.</b> (b) |
| <b>52.</b> (a) | <b>53.</b> (d) | <b>54.</b> (a) | <b>55.</b> (b) |
| <b>56.</b> (d) | <b>57.</b> (c) | <b>58.</b> (a) | <b>59.</b> (a) |
| <b>60.</b> (d) | <b>61.</b> (b) | <b>62.</b> (d) | <b>63.</b> (d) |

**64.** (a)  
**65.** (a) : Methane CH<sub>4</sub>; Ethane C<sub>2</sub>H<sub>6</sub>; Propane C<sub>3</sub>H<sub>8</sub>; Butane C<sub>4</sub>H<sub>10</sub>

**66.** (d) **67.** (d) **68.** (b) **69.** (a)  
**70.** (a) : AB is universal recipient; O<sup>-</sup> universal donor

**71.** (b) **72.** (b) **73.** (d)

**74.** (c) : Mass remains same at all places.

**75.** (a) **76.** (c) **77.** (c) **78.** (b)

**79.** (a) **80.** (b) **81.** (d) **82.** (b)

**83.** (b) **84.** (b) **85.** (b) **86.** (b)

**87.** (c) **88.** (a) **89.** (d) **90.** (b)

**91.** (d)

**92.** (d) : 4°C minimum.

**93.** (a) **94.** (b) **95.** (d)

**96.** (b) : Filariasis (Wucheria) is caused by Filaria (Nematode)

**97.** (a) **98.** (c) **99.** (a) **100.** (c)

**101.** (b) **102.** (c) **103.** (d) **104.** (b)

**105.** (a) **106.** (c) **107.** (a) **108.** (d)

**109.** (b) **110.** (b) **111.** (c) **112.** (b)

**113.** (b) **114.** (c) **115.** (a) **116.** (c)

**117.** (c) **118.** (a) **119.** (b) **120.** (c)