

BIOLOGY

Cell

1. In which organ of the human body are lymphocyte cells formed? **(2004)**
(a) Liver (b) Long bone
(c) Pancreas (d) Spleen
2. Which organelle in the cell, other than nucleus, contains DNA? **(2001)**
(a) Centriole (b) Golgi apparatus
(c) Lysosome (d) Mitochondrion
3. Which of the following cell organelles play the most significant role in protein synthesis? **(2001)**
(a) Lysosome and Centrosome
(b) Endoplasmic reticulum and Ribosome
(c) Golgi apparatus and Mitochondria
(d) Lysosome and Mitochondria

Genetics

4. Consider the following : **(2014)**
 1. Bats
 2. Bears
 3. Rodents

The phenomenon of hibernation can be observed in which of the above kinds of animals?

- (a) 1 and 2
- (b) 2
- (c) 1,2 and 3
- (d) Hibernation cannot be observed in any of the above

5. When one gene controls two or more different characters simultaneously, the phenomenon is called **(2002)**

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

6. Match List-I (Scientists) with List-II (Achievements) and select the correct answer: **(2002)**

List-I

- A. Areber and Smith
B. Feldman
C. Mullis
D. Termin and Baltimore

List-II

1. Developed, Transgenic plants with Agrobacterium T-DNA
2. Discovered endonucleases
3. Discovered reverse transcriptase
4. Discovered polymerase chain reaction

Codes :

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

7. Match List-I with List-II and select the correct answer using the codes given below the Lists: **(2001)**

List-I (Achievement in genetics)

- A. Discovery of transduction and conjugation in bacteria
B. Establishing sex-linked inheritance
C. Isolation of DNA Polymerase from E. Coli
D. Establishing the complete genetic code

List-II

1. Khurana 2. Kornberg
3. Morgan 4. Ochoa

Codes :

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

8. 'Metastasis' is the process by which **(2001)**
- (a) cells divide rapidly under the influence of drugs
 - (b) cancer cells spread through the blood or lymphatic system to other sites of 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
9. Which of the following features of DNA makes it uniquely suited to store and transmit genetic information from generation to generation? **(2001)**
- (a) Complementary of the two strands
 - (b) Double helix
 - (c) Number of base-pairs per turn
 - (d) Sugar-phosphate backbone
10. The cellular and molecular control of programmed cell death is known as **(2001)**
- (a) Apoptosis (b) Ageing
 - (c) Degeneration (d) Necrosis

11. A : In human beings, the females play a major role in determining the sex of the offspring.

R : Women have two 'X' chromosomes. **(2000)**

- (a) Both A and R are true and "R" is the correct explanation of A.
- (b) Both A and R are 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.

12. Match List-I with List-II and select the correct answer using the codes given below the lists : **(1998)**

List - I

- A. Theory of Mutation
- B. Theory of Evolution
- C. One gene one enzyme
- D. Operon concept

List - II

- 1. Beadle and Tatum
- 2. Jacob and Monod
- 3. Darwin hypothesis
- 4. De Vries

Codes:

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

Genetic Disorder

13. In the context of genetic disorders, consider the following: **(2009)**

A woman suffers from colour blindness while her husband does not suffer from it. They have a son and a daughter. In this context, which one of the following statements is most probably correct?

- (a) Both children suffer from colour blindness.

- (b) Daughter suffers from colour blindness while son does not suffer from it.
- (c) Both children do not suffer from colour blindness.
- (d) Son suffers from colour blindness while daughter does not.

14. Match List I (Diseases) with List-II (Types of disease) and select the correct answer using the codes given below the **(2000)**

List -1

List -2

- | | |
|----------------|-----------------------|
| A. Haemophilia | 1. deficiency disease |
| B. Diabetes | 2. Genetic Disease |
| C. Rickets | 3. Hormonal disorder |
| D. Ringworm | 4. Fungal infection |

Codes:

A B C D

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

15. Which one of the following genetical disease is sex-linked? **(1999)**

- (a) Royal haemophilia (b) Tay-Sachs disease
- (c) Cystic fibrosis (d) Hypertension

16. Haemophilia is a genetic disorder which leads to **(1998)**

- (a) decrease in haemoglobin level
- (b) rheumatic heart disease
- (c) decrease in haemoglobin
- (d) non-clotting of blood

17. Which one of the following techniques can be used to establish the paternity of a child? **(1997)**

- (a) Protein analysis
- (b) Chromosome counting
- (c) Quantitative analysis of D.N.A.
- (d) D.N.A. finger printing

**Human Physiology : Nutrition and Digestive
System**

18. Consider the following minerals : **(2013)**

- 1. Calcium 2. Iron
- 3. Sodium

Which of the minerals given above is/are required by human body for the contraction of muscles ?

- (a) 1 (b) 2 and 3
 - (c) 1 and 3 (d) 1,2, and 3
19. A married couple adopted a male child. A few years later, twin boys were born to them. The blood group of the couple is AB positive and O negative. The blood group of the three sons is A positive, B positive, and O positive. The blood group of the adopted son is **(2011)**
- (a) O positive
 - (b) A positive
 - (c) B positive
 - (d) Cannot be determined on the basis of the given data
20. Which of the following processes in the bodies of living organisms is a digestive process ? **(2010)**
- (a) Breakdown of proteins into amino acids
 - (b) Breakdown of glucose into CO^2 and H^2O

- (c) Conversion of glucose into glycogen
- (d) Conversion of amino acids into proteins

21. Consider the following statements about probiotic food : **(2008)**

1. Probiotic food contains live bacteria which are considered beneficial to humans.
2. Probiotic food helps in maintaining gut flora.

Which of the statements given above is/are correct?

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

22. Assertion (A) : In human body, liver has important role in fat digestion.

Reasons (R): Liver produces two important fat - digesting enzymes.

(2008)

- (a) Both "A" and "R" are true and "R" is the correct explanation of "A".
- (b) Both "A" and "R" are 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.

23. What is the pH level of blood of a normal person? **(2008)**

- (a) 4.5-4.6 (b) 6.45-6.55
- (b) 7.35 - 7.45 (d) 8.25 - 8.35

24. In the human body, which structure is appendix attached to?

- (a) The large intestine (b) The small intestine
- (c) The gall bladder (d) The stomach

25. In human beings, normally in which one of the following parts, does the sperm fertilize the ovum? **(2007)**

- (a) Cervix
(b) Fallopian tube
(c) Lower part of uterus
(d) Upper part of uterus
26. Which one of the following is not a digestive enzyme in the human system?
(a) Trypsin (b) Gastrin
(c) Ptyalin (d) Pepsin
27. Which one of the following is the correct sequence in the order of decreasing length of the three structural parts given below of small intestine in the human body? **(2007)**
(a) Jejunum - Duodenum - Ileum
(b) Ileum - Duodenum - Jejunum
(c) Jejunum - Ileum - Duodenum
(d) Ileum - Jejunum - Duodenum
28. Consider the following statements: **(2006)**
1. Caffeine, a constituent of tea and coffee is a diuretic.
 2. Citric acid is used in soft drinks.
 3. Ascorbic acid is essential for the formation bones and teeth.
 4. Citric acid is a good substitution for ascorbic acid in our nutrition.
- Which of the statements given above are correct?
(a) 1 and 2 (b) 1,2 and 3
(c) 3 and 4 (d) 1,2, 3 and 4
29. Consider the following statements with reference to human body: **(2006)**
1. The common bile duct releases its contents into stomach.
 2. The pancreatic duct releases its contents into duodenum.

Which of the statements given above is/are correct ?

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

30. Which is the name of the vessel that delivers the nutrient rich blood from the stomach and small intestine to the liver ? **(2006)**

- (a) Left hepatic artery
(b) Hepatic vein
(c) Right hepatic artery
(d) Hepatic portal vein

31. Which one among the following is not a good source of nutritional calcium ?

- (a) Rice (b) Ragi
(c) Skimmed milk (d) Egg

32. A: All proteins in our food are digested in small intestine only.

R : The protein-digesting enzymes from pancreas are released into small intestine. **(2005)**

- (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.

33. Consider the following statements. **(2004)**

1. Non-function of lachrymal gland is an important symptom of deficiency of Vitamin A
2. Deficiency of Vitamin B, 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^{++} in urine

Which of the statement given above are correct?

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

34. A : Fatty acids should be a part of the balanced human diet. **(2004)**

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

- (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.

35. With reference to normal human beings, consider the following statements : **(2003)**

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) 1 (b) 2
(c) 1 and 2 (d) Neither 1 nor 2

36. Which one of the following statements is/are correct ? **(2003)**

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

37. **A** : Human diet should compulsorily contain Glycine, Serine and Tyrosin.

R : Essential amino-acids cannot be synthesized in the human body. (2002)

- (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.

38. With reference to the blood in a normal person, which one of the following statements is correct? (2002)

- (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% of the total volume of the blood
- (c) White Blood Cells (WBC) are made by lymphnodes only
- (d) The blood has more platelets than WBC

39. Match List-I with List-II and select the correct answer using the codes given below the Lists: (2001)

List-I
(Substance) role)

- A. Ptyalin
- B. Pepsin
- C. Retina
- D. Oxytocin

List-II (Physiological

- 1. Converts angiotensinogen in blood into angiotensin
- 2. Digest Starch
- 3. Digest proteins
- 4. Hydrolyses fats

5. Induces contraction of smooth muscles

Codes :

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

40. 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? (2001)
- (a) O, R_lr (b) O, Rh⁺
(c) AB, R_lr (d) AB, Rh⁺
41. The blood glucose level is commonly expressed as (2000)
- (a) mm. of Hg (b) milligram per decilitre
(c) parts per million (d) grammes per litre
42. Lathyrism is caused by excessive consumption of (1999)
- (a) kesari dal (b) mustard oil
(c) polished rice (d) mushrooms
43. Consumption of fish is considered to be healthy when compared to flesh of other animals because fish contains (1998)
- (a) polyunsaturated fatty acids
(b) saturated fatty acids
(c) more carbohydrates and proteins
(d) blood, blood group & circulatory system

Respiratory System

44. The sensation of fatigue in the muscles after prolonged strenuous physical work is caused by (2000)
- (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

Immunology

45. Regular intake of fresh fruits and vegetables is recommended in the diet since they are a good source of antioxidants. How do antioxidants help a person maintain health and promote longevity? (2011)
- (a) They activate the enzymes necessary for vitamin synthesis in the body and help prevent vitamin deficiency
 - (b) They prevent excessive oxidation of carbohydrates, fats and proteins in the body and help avoid unnecessary wastage of energy
 - (c) They neutralize the free radicals produced in the body during metabolism
 - (d) They activate certain genes in the cells of the body and help delay the ageing process
46. Antigen is a substance which (2001)
- (a) destroys harmful bacteria
 - (b) is used to treat poisoning
 - (c) lowers body temperature
 - (d) stimulates formation of antibody

Excretory System

47. With reference to the work of human kidney, consider the following statements : (2003)

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 glucose is reabsorbed and sent back to the blood in the renal vein.

Which of these statements is/are correct ?

- (a) 1 (b) 2
(c) 1 and 2 (d) Neither 1 nor 2
48. The 'Stones' formed in human kidney consist mostly of (2000)
(a) calcium oxalate (b) sodium acetate
(c) magnesium sulphate (d) calcium
49. The major chemical compound found in humans kidney stones is (1991)
(a) uric acid (b) calcium carbonate
(c) calcium oxalate (d) calcium sulphate

Sense Organ and Nervous System

50. Which one of the following parts of the human brain is the regulating centre for swallowing and vomiting? (2007)
(a) Cerebellum (b) Cerebrum
(c) Medulla oblongata (d) Pons
51. In the eye donation, which part of the eye is transplanted from the donor ? (2001)
(a) Cornea (b) Lens
(c) Retina (d) The whole eye

Endocrine System (Hormones)

52. In human body, which one of the following hormones regulates blood calcium and phosphate? **(2007)**
- (a) Glucagen
 - (b) Growth hormone
 - (c) Parathyroid hormone
 - (d) Thyroxine
53. Production of which one of the following is a function of the liver? **(2007)**
- (a) Lipase
 - (b) Urea
 - (c) Mucus
 - (d) Hydrochloric acid
54. The hormone insulin is a
- (a) Glycolipid
 - (b) Fatty acid
 - (c) Peptide
 - (d) Sterol
55. **A** : Drinking of whisky increases the frequency of urination.
R : Alcohol intake speeds up the secretion of vasopresin in the body **(2002)**
- (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.
56. With reference to the human body, consider the following statements: **(2002)**
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, and 4 (b) 1,2, and 3
 (c) 2, 3, and 4 (d) 1 and 4

57. Match List-I (Endocrine glands) with List-II (Hormones secreted) and select the correct answer using the codes given below the lists :

List-I	List-II
A. Gonads	1. Insulin
B. Pitutary	2. Progesterone
C. Pancreas	3. Growth hormones
D. Adrenal	4. Cortisone

Codes

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

58. Match the hormones in List-I with List-II and select the correct answer using the codes given below the lists :

List-I	List-II
a. Adrenalin	1. Anger, fear, danger
b. Estrogen	2. Attracting partners through sense smell
c. Insulin	3. Females
d. Pheromones	4. Glucose

Codes:

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

Diseases

59. Consider the following pairs: (2014)

A. Adrenalin	1. Anger, fear, danger
Vitamin	Deficiency disease
1. Vitamin C	Scurvy
2. Vitamin D	Rickets
3. Vitamin E	Night blindness

Which of the pairs given above is/are correctly matched ?

- (a) 1 and 2 (b) 3
 (d) 1, 2, and 3 (d) None

60. Consider the following diseases : (2014)

1. Diphtheria
2. Chickenpox
3. Smallpox

Which of the above diseases has/have been eradicated in India ?

- (a) 1 and 2 (b) 3
 (c) 1, 2 and 3 (d) None

61. Which of the following diseases can be transmitted from one person to another through tattooing ? (2013)

1. Chikungunya
2. Hepatitis B
3. HIV-AIDS

Select the correct answer using the Codes below:-

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

62. Widespread resistance of malarial parasite to drugs like chloroquine has prompted attempts to develop a malarial vaccine to combat malaria. Why is it difficult to develop an effective malaria vaccine?

(2010)

- (a) Malaria is caused by several species of Plasmodium
(b) Man does not develop immunity to malaria during natural infection
(c) Vaccines can be developed only against bacteria
(d) Man is only an intermediate host and not the definitive host

63. Consider the following statements : **(2010)**

1. Hepatitis B is several times more infectious than HIV/ AIDS
2. Hepatitis B can cause liver cancer

Which of the statements given above is/are correct ?

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

64. Consider the following statements : **(2010)**

1. Every individual in the population is equally susceptible host for Swine Flu.
2. Antibiotics have no role in the primary treatment of Swine Flu.
3. To prevent the future spread of Swine Flu in the epidemic area, the swine (pigs) must all be culled.

Which of the statements given above is/are correct ?

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

65. With regard to the transmission of the Human Immunodeficiency virus, which one of the following statements is not correct ? **(2010)**
- (a) The chances of transmission from female to male are twice as likely as from male to female
 - (b) The chances of transmission are more if a person suffers from other sexually transmitted infections
 - (c) An infected mother can transmit the infection to her baby during pregnancy, at childbirth and by breast feeding
 - (d) The risk of contracting infection from transfusion of infected blood is much higher than an exposure to contaminated needle

66. Robert Webster is known for his work associated with which one of the following : **(2007)**
- (a) Cardiology
 - (b) Influenza virus
 - (c) HIV/AIDS
 - (d) Alzheimer

67. Consider the following statements : **(2006)**

1. Meningococcal Meningitis is transmitted from person to person by mosquito bites.
2. Vomiting and neck pain are two of the symptoms of Meningococcal Meningitis.

Which of the statements given above is/are correct?

- 1. 1
- (b) 2
- 3. 1 and 2
- (d) Neither 1 nor 2

68. Consider the following statements : **(2005)**

1. ELIS A test to employed as the first and most basic test for an individual to detect cancer.
2. Almost 50% of human beings have Rh+ blood while the remaining have Rh-blood.

Which of the statements given above is/are correct?

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

69. Consider the following : **(2005)**

1. Dengue is a protozoan disease transmitted by mosquitoes.
2. Retro-orbital pain is not a symptom of Dengue.
3. Skin rash and bleeding from nose and gums are some of the symptoms of Dengue.

Which of the statements given above is/are correct ?

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

70. Pneumoconiosis afflicts the workers who work mainly in **(2005)**

- (a) tanneries (b) coal mining industry
(c) distilleries (d) glass industry

71. Which of the following diseases of milching animals are infectious ?
(2005)

1. Foot and Mouth disease
2. Anthrax
3. Black Quarter
4. Cowpox

Select the correct answer using the code given below :

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

72. A: The person with diabetes insipidus feels thirsty

R : A person with diabetes insipidus suffers from excess secretion of vasopressin. **(2005)**

- (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.

73. Consider the following statements. **(2004)**

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

74. Consider the following conditions of a sick human body **(2003)**

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

Which of these are symptoms of AIDS ?

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

75. Food and Mouth disease in animals, a current epidemic in some parts of the world, is caused by **(2002)**

- (a) Bacteria
- (b) Fungus
- (c) Protozoa
- (d) Virus

76. 'Athlete's Foot' is a disease caused by **(2001)**

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

77. At which stage in its life cycle does the silkworm yield the fibre of commerce ? (2000)

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

78. In eye donation, which one of the following parts of donor's eye is utilized ? (1999)

- (a) Iris (b) Lens
(c) Cornea (d) Retina

79. When ants bite, they injected

- (a) glacial acetic acid (b) methanol
(c) formic acid (d) stearic acid

80. Match List-I with List-II and select the correct answer using the codes given below the lists. (1998)

List-I (Disease)

List-II (Organism)

- | | |
|------------------|---------------|
| A. Malaria | 1. Fungi |
| B. Poliomyelitis | 2. Bacteria |
| C. Tuberculosis | 3. Virus |
| D. Ringworm | 4. Protozoana |

Codes:

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

Evolution

81. Among the following organisms, which one does not belong to the class of other three ? **(2014)**

- (a) Crab (b) Mite
(c) Scorpion (d) Spider

82. Which one of the following is the correct sequence of a food chain ? **(2014)**

- (a) Diatoms-Crustaceans-Herrings
(b) Crustaceans-Diatoms-Herrings
(c) Diatoms-Herrings-Crustaceans
(d) Crustaceans-Herrings-Diatoms

84. Which one of the following sets of elements was primarily responsible for the origin of life on the Earth ? **(2012)**

- (a) Hydrogen, Oxygen, Sodium
(b) Carbon, Hydrogen, Nitrogen
(c) Oxygen, Calcium, Phosphorus
(d) Carbon, Hydrogen, Potassium

With reference to the evolution of living organisms, which one of the following sequences is correct ? **(2009)**

- (a) Octopus - Dolphin - Shark
(b) Pangolin - Tortoise - Hawk
(c) Salamander - Python - Kangaroo
(d) Frog - Carb - Prawn

85. The marine animal called dugong which is vulnerable to extinction is a/an **(2009)**

- (a) Amphibian (b) Bony fish
(c) Shark (d) Mammal

86. In the context of organic evolution, the loss of limbs of snakes is explained by the phenomenon of **(2002)**
- (a) use and disuse of organs
 - (b) adaptation to living in burrows
 - (c) natural selection
 - (d) inheritance of acquired characters
87. Among living organisms, which one of the following is the most responsible factor for bringing about the origin of a new species ? **(2002)**
- (a) Isolation (b) Mutation
 - (c) Natural Selection (d) Sexual Reproduction

Botany and Agriculture

88. With reference to Neem tree, consider the following statements: **(2014)**
1. Neem oil can be used as a pesticide to control the proliferation of some species of insects and mites.
 2. Neem seeds are used in the manufacture of biofuels and hospital detergents.
 3. Neem oil has applications in pharmaceutical industry.
- Which of the statements given above is/are correct ?
- (a) 1 and 2 (b) 3
 - (c) 1 and 3 (d) 1, 2 and 3
89. Which one of the following is the process involved in photosynthesis? **(2014)**
- (a) Potential energy is released to form free energy.
 - (b) Free energy is converted into potential energy and stored.
 - (c) Food is oxidized to release carbon dioxide and water.

(d) Oxygen is taken, and carbon dioxide and water vapour are given out.

90. Which of the following statements is/are correct regarding vegetative propagation of plants ? **(2014)**

1. Vegetative propagation produces clonal population.
2. Vegetative propagation helps in eliminating the virus.
3. Vegetative propagation can be practiced most of the year.

Select the correct answer using the codes given below :

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

91. Consider the following techniques/phenomena: **(2014)**

1. Budding and grafting in fruit plants
2. Cytoplasmic male sterility
3. Gene silencing

Which of the above is/are used to create transgenic crops?

- (a) 1 (b) 2 and 3
(c) 1 and 3 (d) None

92. Lichens, which are capable of initiating ecological succession even on a bare rock, are actually a symbiotic association of **(2014)**

- (a) algae and bacteria (b) algae and fungi
(c) bacteria and fungi (d) fungi and mosses

93. Consider the following organisms. **(2013)**

1. Agaricus
2. Nostoc
3. Spirogyra

Which of the above is/are used as biofertilizer/biofertilizers?

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

94. Which of the following adds/add nitrogen to the soil ? **(2013)**

1. Excretion of urea by animals
2. Burning of coal by man
3. Death of vegetation

Select the correct answer using the codes given below :

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

95. When the bark of a tree is removed in a circular fashion all around near its base, it gradually dries up and dies because **(2011)**

- (a) water from soil cannot rise to aerial parts
- (b) roots are starved of energy
- (c) tree is infected by soil microbes
- (d) roots do not receive oxygen for respiration

96. Consider the following statements: **(2009)**

1. Sweet orange plant is propagated by grafting technique.
2. Jasmine plant is propagated by layering technique

Which of the statements given above is/are correct ?

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

97. In making the saffron spice, which one of the following parts of the plant is used ? **(2009)**

- (a) Leaf (b) Petal
(c) Sepal (d) Stigma

98. Which one of the following parts of the pitcher plant becomes modified into a pitcher ?

- (a) Stem (b) Leaf
(c) Stipule (d) Petiole

99. Which of the following types of light are strongly absorbed by plants? (2007)

- (a) Violet and orange (b) Blue and red
(c) Indigo and yellow (d) Yellow and violet

100. Consider the following plants (2002)

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

Which of these plants are propagated by stem cutting ?

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

101. In a bisexual flower, if androceium and gynaecium mature at different times, the phenomenon is known as (2002)

- (a) dichogamy (b) herkogamy
(c) heterogamy (d) monogamy

102. Epiphytes are plants which depend on other plants for (2001)

- (a) food (b) mechanical support
(c) shade (d) water

103. Phytotron is a facility to (2000)

- (a) grow plants under diseases free conditions
(b) conserve endangered species of plants
(c) grow plants under controlled conditions
(d) induce mutations

104. Canola refers to special type of oil seeds mustard varieties breed for human consumption. The main characteristic of these varieties is that the (2000)

- (a) seeds have very high oil content
(b) oil rich in unsaturated fatty acids

- (c) oil has long shelf-life
(d) oil has very low Erucic acid content
105. Hybridoma technology is a new biotechnical approach for commercial production of **(2000)**
- (a) monoclonal antibodies
(b) interferon
(c) antibiotics
(d) alcohol
106. Sucrose content in sugarcane decreases **(2000)**
- (a) if high rainfall occurs during the period of growth of the plant
(b) if frost occurs during the period of ripening
(c) if there is fluctuation in temperature during the period of growth of the plant
(d) if there is high temperature during the time of ripening
107. Which one of the following agriculture practices is eco-friendly? **(1999)**
- (a) Organic farming
(b) Shifting cultivation
(c) Cultivation of high yielding varieties
(d) Growing plants in glass houses
108. Ergotism is caused due to consumption of **(1998)**
- (a) contaminated grains
(b) rotting vegetables
(c) contaminated water
(d) stale cooked food
109. Estuaries possess distinct blooms of excessive growth of a pigmented dinoflagellates. These blooms are called **(1998)**
- (a) red tides (b) sea tides

(c) black tides (d) sea flower

110. Which one of the following types of microorganisms is most widely used in industries?

- (a) Bacteria
- (b) Bacteria and Fungi
- (c) Bacteria and Algae
- (d) Bacteria Micro Algae & Fungi

Miscellaneous

111. Improper handling and storage of cereal grains and oilseeds result in the production of toxins known as aflatoxins which are not generally destroyed by normal cooking process. Aflatoxins are produced by **(2013)**

- (a) Bacteria (b) Protozoa
- (c) Moulds (d) Viruses

112. Consider the following animals : **(2013)**

- 1. Sea cow 2. Seahorse
- 3. Sea lion

Which of the above is/are mammal/mammals?

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

113. Which of the following statements is/are correct? **(2013)**

- 1. Viruses lack enzymes necessary for the generation of energy.
- 2. Viruses can be cultured in any synthetic medium.
- 3. Viruses are transmitted from one organism to another by biological vectors only

Select the correct answer using the codes given below :

- (a) 1 (b) 2 and 3

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

114. Consider the following kinds of organisms : **(2012)**

1. Bacteria
2. Fungi
3. Flowering plants

Some species of which of the above kinds of organisms are employed as biopesticides ?

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

115. Consider the following kinds of organisms : **(2012)**

1. Bat
2. Bear
3. Bird

Which of the above is/are pollinating agent/agents ?

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

116. The pituitary gland by virtue of its tropic hormones controls the secretory activity of other endocrine glands. Which one of the following endocrine glands can function independent of the pituitary gland? **(1997)**

- (a) Thyroid (b) Gonads
(c) Adrenals (d) Parathyroid

117. Oxygen transportation in a human body takes place through **(1997)**

1. Blood
2. Lungs
3. Tissue the correct sequence of transportations is-

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

118. Corpus luteum is a mass of cells found in : **(1997)**
- (a) brain (b) ovary
(c) pancreas (d) spleen
119. Which one of following is an active component of oil of clove?
(1997)
- (a) Menthol (b) Eugenol
(c) Methanol (d) Benzaldehyde
120. The most reactive among the halogens is : **(1997)**
- (a) Fluorine (b) Chlorine
(c) Bromine (d) Iodine
121. Which one of the following organisms is likely to show the highest concentration of D.D.T. once it has been introduced into the Ecosystem? **(1997)**
- (a) Grasshopper (b) Toad
(c) Snake (d) Cattle
122. Alpha-keratin is a protein present in: **(1997)**
- (a) blood (b) skin
(c) wool (d) eggs
123. A girl is swinging on a swing in sitting position. When the same girl stands up, the period of swing will **(1997)**
- (a) be shorter (b) be longer
(c) depend on the height of the girl
(d) not change
124. The major component of honey is **(1997)**
- (a) Glucose (b) Sucrose
(c) Maltose (d) Fructose

125. Match List-I with List-II and select the correct answer: (1997)

List I	List II
A Malaria	1. Bone-marrow
B Failaria	2. Brain
C Encephalitis	3. Muscle
D Leukaemia	4. Lymph node
	5. Blood cells

Codes

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

126. Antigen is a substance which : (1997)

- (a) lowers body temperature
- (b) destroys harmful bacteria
- (c) triggers the immune system
- (d) is used as an antidote to poison

127. Match List I with List II and select the correct answer : (1996)

List I	List II
Vitamin	Pepsin
Enzyme	Carotene
Hormone	Kerotin
Protein	Progesterone

Codes :

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

128. Consider the following statements: AIDS is transmitted (1996)

1. by sexual intercourse
 2. by blood transfusion
 3. by mosquitoes and other blood sucking insects
- (a) 1, 2 and 3 correct (b) 1, 2 and 4 are correct
(c) 1, 3 and 4 are correct (d) 1 and 3 are correct

129. Which of the following would lead to malnutrition? (1996)

1. Overnutrition
2. Undernutrition
3. Imbalanced nutrition

Select the correct answer by using the codes given below:

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

130. Which one of the following is a modified stem? (1996)

- (a) Carrot (b) Sweet potato
(c) Coconut (d) Potato

131. Fat present below the skin surface in our body, acts as a barrier against: (1996)

- (a) loss of heat from the body
- (b) loss of essential body fluids
- (c) loss of salts from the body
- (d) entry of harmful micro organisms from the environment

132. Which of the following professional (s) are more likely to run the risk of a permanent change in their cell's DNA?

1. Researchers using carbon-14 isotope (1996)
2. X-ray technician
3. Coal miner
4. Dyer and painter

Select the correct answer by using the codes given below:

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

133. Of the four trademarks in medical history given below, which one was the first to take place? (1996)

- (a) Organ transplant (b) Bypass Surgery
(c) Test-tube baby (d) Plastic Surgery

134. According to the World Health Organisation the disease which causes the death of the largest number of people today is: (1996)

- (a) AIDS (b) Tuberculosis
(c) Malaria (d) Ebola

135. Mouse is to cat as fly is to : (1996)

- (a) rat (b) animal
(c) spider (d) horse

136. Biologists have so far known, found and indentified a large number of species in the plant and animal kingdom. In terms of numbers, the largest found and identified so far is from among the: (1996)

- (a) fungi (b) plants
(c) insects (d) bacteria

137. Which of the following are associated with diabetes mellitus, a common disease in adults? (1996)

1. Higher sugar level in blood
2. Lower sugar level in blood
3. Lower insulin level in blood
4. Higher insulin level in blood

Select the correct answer by using the codes given below: (1996)

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

138. Match List-I (Physiological processes) with List-II (Cell organelles) and select the correct answer: (1996)

List I

A Photosynthesis

B Mineral uptake

C Respiration

D Protein synthesis

List II

1. Plasma membrane

2. Chloroplast

3. Mitochondria

4. Ribosomes

Codes:

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

ANSWERS KEY

1. (d) 2. (d) 3. (b) 4. (c) 5. (c)
6. (a) 7. (d) 8. (b) 9. (a) 10. (a)
11. (d) 12. (b) 13. (d) 14. (b) 15. (b)
16. (d) 17. (d) 18. (d) 19. (a) 20. (a)
21. (c) 22. (c) 23. (c) 24. (a) 25. (b)
26. (b) 27. (d) 28. (d) 29. (b) 30. (d)
31. (a) 32. (d) 33. (d) 34. (c) 35. (c)
36. (a) 37. (d) 38. (d) 39. (a) 40. (a)
41. (b) 42. (a) 43. (a) 44. (d) 45. (c)
46. (d) 47. (b) 48. (a) 49. (c) 50. (c)

51. (a) 52. (c) 53. (b) 54. (b) 55. (c)
56. (d) 57. (c) 58. (c) 59. (a) 60. (b)
61. (b) 62. (a) 63. (c) 64. (b) 65. (a)
66. (b) 67. (b) 68. (d) 69. (b) 70. (b)
71. (d) 72. (a) 73. (a) 74. (d) 75. (d)
76. (b) 77. (c) 78. (c) 79. (c) 80. (a)
81. (a) 82. (a) 83. (b) 84. (c) 85. (d)
86. (a) 87. (b) 88. (d) 89. (b) 90. (c)
91. (b) 92. (b) 93. (b) 94. (c) 95. (b)
96. (c) 97. (d) 98. (b) 99. (b) 100. (d)
101. (a) 102. (b) 103. (c) 104. (b) 105. (a)
106. (a) 107. (a) 108. (a) 109. (a) 110. (d)
111. (c) 112. (b) 113. (c) 114. (d) 115. (d)
116. (d) 117. (c) 118. (b) 119. (b) 120. (a)
121. (d) 122. (b) 123. (a) 124. (d) 125. (b)
126. (c) 127. (b) 128. (c) 129. (b) 130. (d)
131. (a) 132. (b) 133. (d) 134. (b) 135. (c)
136. (c) 137. (d) 138. (c)

TIMES IAS ACADEMY

PHYSICS

MECHANICS

1. Consider the following statements : **(2012)**

If there were no phenomenon of capillarity

1. it would be difficult to use a kerosene lamp
2. one would not be able to use a straw to consume a soft drink
3. the blotting paper would fail to function
4. the big trees that we see around would not have grown on the Earth

Which of the statements given above are correct?

- (a) 1,2 and 3
 - (b) 1,3, and 4
 - (c) 2 and 4
 - (d) 1,2, 3 and 4
2. A person is sitting in a car which is at rest. The reaction from the road at each of the four wheels of the car is R . When the car runs on a straight level road, how will the reaction at either of the front wheels vary ? **(2008)**
- (a) It will be greater than R
 - (b) It will be less than R
 - (c) It will be equal to R
 - (d) It shall depend on the material of the road
3. Four wires of same material and of dimensions as under are stretched by a load of same magnitude separately.
- Which one of them will be elongated maximum ? **(2007)**
- (a) Wire of 1 m length and 2 mm diameter
 - (b) Wire of 2 m length and 2 mm diameter
 - (c) Wire of 3 m length and 1.5 mm diameter
 - (d) Wire of 1 m length and 1 mm diameter

4. A: A jet aircraft moving at Mach Number equal to 1 travels faster at an altitude of 15 km than while moving at Mach Number equal to 1 near the sea level.

R : The velocity of sound depends on the temperature of the surrounding medium. (2007)

(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.

5. Three identical vessels A, B and C are filled with water, mercury and kerosene respectively up to an equal height. The three vessels are provided with identical taps at the bottom of the vessels. If the three taps are opened simultaneously, then which vessel is emptied first? (2007)

(a) Vessel B

(b) All the vessels A, B and C will be emptied simultaneously

(c) Vessel A

(d) Vessel C

6. Which one of the following is the correct sequence of the given substances in the decreasing order of their densities? (2005)

(a) Steel > Mercury > Gold (b) Gold > Mercury > Steel

(c) Steel > Gold > Mercury (d) Gold > Steel > Mercury

7. A car is running on a road at a uniform speed of 60 km/ hr. the net resultant force on the car is (2004)

(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
8. A spherical body moves with a uniform angular velocity around a circular path of radius r . Which one of the following statements is correct? (2004)
- (a) The body has no acceleration
(b) The body has a radial acceleration.... directed towards the centre of the path
(c) The body has a radial acceleration directed away from the centre of the path
9. A weightless rubber balloon is filled with 200 cc of water. Its weight in water is equal to (2004)
- (a) $9.8/5$ N (b) $9.8/10$ N
(c) $9.8/2$ N (d) Zero
10. A person stands at the middle point of a wooden ladder which starts slipping between a vertical wall and the floor of a room, while continuing to remain in a vertical plane. The path traced by a person standing at the middle point of the slipping ladder is (2004)
- (a) A straight line (b) An elliptical path
(c) A circular path (d) A parabolic path
11. Consider the following statements: A 4-wheeled vehicle moving in a sharp circular path at high speed will (2003)
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 & 3 (b) 2 & 4
(c) 2 & 3 (d) 1 & 4

12. A car travels the 1st one-third of a certain distance with a speed of 10 km/hr, the next one third distance with a speed of 20 km/hr and the last one-third distance with a speed of 60 km/hr. The average speed of the car for the whole journey is: (2003)

- (a) 18 km/hr (b) 24 km/hr
(c) 30 km/hr (d) 36 km/hr

13.A : The weight of a body decreases with the increase of latitude on earth.

R : The earth is not a perfect sphere. (2003)

- (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.

14.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 (2003)

- (a) decrease in size
(b) flatten into a disc-like shape
(c) increase in size
(d) maintain the same size and shape

15.An oil tanker is partially filled with oil and moves forward on a level road with uniform acceleration. The free surface of oil then (2003)

- (a) remains horizontal

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

16. A solid cube just gets completely immersed in water when a 0.2 kg mass is placed on it. If the mass is removed, the cube is 2cm above the water level what is the length of each side of the cube (2002)

- (a) 12 cm (b) 10 cm
- (c) 8 cm (d) 6 cm

17.A : An iron ball floats on mercury but gets immersed in water.

R : The specific gravity of iron is more than that of mercury. (2002)

- (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.

18.A: Artificial satellites are always launched from the earth in the eastward direction.

R : The earth rotates from west to east and so the satellite attains the escape velocity. **(2002)**

- (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.

19. A: The viscosity of Glycerine increases with increase in temperature.

R: The increase in temperature increase the kinetic energy of the molecules. **(2002)**

- (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.

19. Two ladies simultaneously leave cities A and B connected by a straight road and travel towards each other. The first lady travels 2 km/hr faster than the second lady and reaches B one hour before the second lady reaches A. The two cities A and B are 24 km apart. How many kilometers does each lady travel in one hour ? **(2002)**

- (a) 5 km, 3 km (b) 7km, 5 km
- (c) 8 km, 6 km (d) 16 km, 14 km

20. The mass of a body on earth is 100 kg (acceleration due to gravity, $g_e = 10 \text{ m/s}^2$). If acceleration due to gravity on the moon is ($g/6$), then the mass of the body on the moon is **(2001)**

- (a) 100/6 kg (b) 60 kg
- (c) 100 kg (d) 600 kg

21. In which of the following distance-time graph one represents a uniform one-dimensional motion ? **(2001)**

Which of these statements are correct ?

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

22. In which of the following distance-time graph one represents a uniform one-dimensional motion? (2001)
23. Consider the following statements. **(2001)**
1. the acceleration is zero when the bob passes through the mean position.
 2. in each cycle the bob attains a given velocity twice.
 3. both acceleration and velocity of the bob are zero when it reaches its extreme position during its oscillation.
 4. the amplitude of oscillation of the simple pendulum decreases with time.
24. A : A man, standing on a completely frictionless surface can propel himself by whistling.
R : If no external force acts on a system, its momentum cannot change. **(2001)**
- (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.
25. A person starts from a point A and travels 3 km eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B and reaches his destination D. The shortest distance between the starting point and destination is **(1999)**
- (a) 18 km
 - (b) 16 km
 - (c) 15 km
 - (d) 12 km

26. In which of the following, "Capillarity" is not the only reason? (1999)

- (a) Blotting of ink
- (b) Rising of underground water
- (c) The spreading of water-drops on cotton cloths
- (d) The rising of water from the root of the plants to the leaves.

27. Match List I (Quantity) with List II (Units) and select the correct answer using the codes given below the list: (1999)

List I	List II
A High speed	1. Mach
B Wavelength	2. Angstrom
C Pressure	3. Pascal
D Energy	4. Joule

Codes:

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

28. A ball is dropped from the top of a high building with a constant acceleration of 9.8 ms^{-2} . What will be its velocity after 3 seconds?

(1998)

- (a) 9.8 m/s (b) 19.6 m/s
- (c) 29.4 m/s (d) 29.4 m/s

ANSWER KEY:

1.	b	2.	b	3.	c	4.	a	5.	d
6.	b	7.	a	8.	b	9.	d	10.	c
11.	c	12.	b	13.	d	14.	d	15.	c
16.	b	17.	c	18.	a	19.	d	20.	c
21.	c	22.	d	23.	d	24.	b	25.	c
26.	d	27.	c	28.	c				

Sound

1. Consider the following statements : **(2008)**

1. A widely used musical scale called diatonic scale has seven frequencies.
2. The frequency of the note Sa () is 256 Hz and that of Ni () is 512 Hz

Which of the statements given above is/are correct ?

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

2. Consider the following statements : **(2007)**

1. A flute of smaller length produces waves of lower frequency.
2. Sound travels in rocks in the form of longitudinal elastic waves only.

Which of the statements given above is/are correct ?

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

3. In which one among the following is the speed of sound maximum ? **(2006)**

- (a) Air at 0°C (b) Air at 100°C
(c) Water (d) Wood

4. What does the term 'Dolby B' or 'Dolby C' printed on tape recorders and other sound systems refer to ? **(2006)**

- (a) Frequency modulated system
(b) Amplitude modulated system
(c) Noise reduction circuit
(d) Both DC and AC power can be used

5. Which one of the following statements is not correct ?

(2003)

- (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

6. A noise level of 100 decibels would correspond to **(2000)**

- (a) just audible sound
- (b) ordinary conversation
- (c) sound from a noisy street
- (d) noise from a machine-shop

Answer Key :

1. a 2. b 3. d 4. c 5. c 6. d

HEAT AND THERMODYNAMICS

1. The surface of a lake is frozen in severe winter, but the water at its bottom is still liquid. What is the reason? **(2011)**
 - (a) Ice is a bad conductor of heat
 - (b) Since the surface of the lake is at the same temperature as the air, no heat is lost
 - (c) The density of water is maximum at 4°C
 - (d) None of the statements (a), (b) and (c) given above is correct
2. If a potato is placed on a pure paper plate which is white and unprinted and put in a microwave oven, the potato heats up but the paper plate does not. This is because **(2010)**
 - (a) Potato is mainly made up of starch whereas paper is mainly made up of cellulose
 - (b) Potato transmits microwaves whereas paper reflects microwaves
 - (c) Potato contains water whereas paper does not contain water
 - (d) Potato is a fresh organic material whereas paper is a dead organic material
3. What is the principle by which a cooling system (Radiator) in a motor car works ? **(2010)**
 - (a) Conduction only
 - (b) Convection
 - (c) Radiation only
 - (d) Both conduction & radiation
4. Consider the following statements. **(2003)**
 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 vaporization 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) 2 (d) 3

5. A hollow sphere of radius R , a hollow cube of side R and a thin circular plate of radius R , made up of the same material, are all heated to 20°C above room temperature. When left to cool in the room, which of them will reach the room temperature first ? **(2002)**

- (a) Circular plate
(b) Cube
(c) Sphere
(d) All of them will reach the room temperature at the same time

6. Which one of the following statements is not correct ? **(2002)**

- (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 semipermeable membrane, water movement can be prevented by applying pressure to the solution

7. A : The boiling point of water decreases as the height increases.

R : The atmospheric pressure increases with height. **(2001)**

- (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.

8. When water is heated from 0°C to 10°C its volume **(2001)**

(a)increases

(b)decreases

(c)does not change

(d)first decreases and then increases.

9. A: A piece of copper and a piece of glass are both heated to a common temperature and after touching it was noticed that copper is warmer than the glass.

R : The density of copper is more than the density of the glass.

(2001)

(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.

10. Cloudy nights are warmer compared to clear cloudless nights, because clouds **(2001)**

(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 sent it towards earth

11. Strips of two metals A and B are firmly joined together as shown in the figure. On heating, A expands more than B does. If this joined strip is heated, then it will appear as **(1999)**

12. 'Cryogenics' is used in **(1999)**

(a) Space travel, surgery and magnetic levitation

(b) Surgery, magnetic levitation and telemetry

(c) Space travel, surgery and telemetry

(d) Space journey, magnetic levitation and telemetry

Answer Key :

1	c	2	c	3	b	4	d	5	c
6	b	7	c	8	d	9	b	10	b
11	c	12	d						

TIMES IAS ACADEMY

OPTICS

1. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomena are responsible for this ? **(2013)**

1. Dispersion 2. Refraction
3. Internal reflection

Select the correct answer using the codes given below,

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

2. Which of the following is/are cited by the scientists as evidence/evidences for the continued expansion of universe ? **(2012)**

1. Detection of microwaves in space
2. Observation of redshift phenomenon in space.
3. Movement of asteroids in space
4. Occurrence of supernova explosions in space

Select the correct answer using the codes given below :

- (a) 1 and 2
(b) 2
(c) 1,3 and 4
(d) None of the above can be cited as evidence

3. Which one among the following has the highest energy ? **(2009)**

- (a) Blue light (b) Green light
(c) Red light (d) Yellow light

4. Assertion (A): In the visible spectrum of light, red light is more energetic than green light.

Reason (R) : The wavelength of red light is more than that of green light. **(2008)**

- (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.

5. Which one of the following types of glass can cut off ultraviolet rays ? **(2007)**

(a) Soda glass (b) Pyrex glass

(c) Jena glass (d) Crookes glass

6. Consider the following statements : **(2007)**

1. If magenta and yellow coloured circles intersect, the intersected area will have red colour.

2. If cyan and magenta coloured circles intersect, the intersected area will have blue colour.

Which of the statements given above is/are correct ?

(a) 1 (b) 2

(c) 1 and 2 (d) Neither 1 nor 2

7. Diffusion of light in the atmosphere takes place due to **(2003)**

(a) Carbon dioxide (b) Dust particles

(c) Helium (d) Water vapours

8. Consider the following natural phenomena: **(2002)**

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

9. Consider the following statements : **(2002)**

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 over speeding vehicles, police use the Doppler effect of reflected short radio waves.

Which of these statements are correct ?

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

10. When light waves pass from air to glass, the variables affected are
(2001)

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

11. A : A stick is dipped in water in a slanting position. If observed sideways, the stick appears short and bent at the surface of water.

R : The light coming from the stick undergoes scattering from water molecules giving the stick a short and bent appearance. **(2001)**

- (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.

12. 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 **(2000)**

- (a) reflection and diffraction
- (b) reflection and transmission
- (c) diffraction and transmission
- (d) refraction, diffraction and transmission

13.A : In a motion picture, usually 24 frames are projected every second over the whole length of the film.

R: An image formed on the retina of eye persists for about 0.1 second after the removal of stimulus. **(2000)**

- (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.

14.A: Small glass beads fixed on traffic signals glow brightly when light falls upon them.

R : Light is totally reflected when the angle of incidence exceeds a certain critical value and light travelling in a denser medium is reflected from a rarer medium. **(2000)**

- (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.

15.A : On traffic indicators, the small glass beads fixed on it glitters when light falls on it.

R : The light undergoes total internal reflection when it's angle of incidence is more than a definite critical angle and light travels from a denser medium to a rarer medium. **(1999)**

- (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.

16. Consider the following statements: **(1999)**

1. If a man see a coin kept inside a bucket full of water it appears to be raised from it's original depth.
2. If a man who is inside the water and see a coin kept above the water-level, it will appear to a height more than the original height.

Which of the above statements or statement is/are correct?

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

Answer Key :

1. (d) 2. (b) 3. (a) 4. (a) 5. (d) 6. (c) 7. (b) 8. (c)
9. (d) 10. (d) 11. (c) 12. (d) 13. (a) 14. (a) 15. (a)

Electricity

- Which are the materials generally employed as solder in soldering operation in electronics? (2006)
 - Iron and tin
 - Lead and tin
 - Aluminium and lead
 - Aluminium and iron
- Which one of the following is printed on a commonly used fluorescent tubelight ? (2006)
 - 220 K
 - 273 K
 - 6500 K
 - 9000 K
- What is the order of magnitude of electric resistance of the human body (dry) ?
 - 10^2 ohm
 - 10^4 ohm
 - 10^6 ohm
 - 10^8 ohm
- A : India does not export natural rubber.
R: About 97% of India's demand for natural rubber is met from domestic production. (2004)
 - Both "A" and "R" are individually true and "R" is the correct explanation of "A".
 - Both "A" and "R" are individually true but "R" is not a correct explanation of "A".
 - A is true but "R" is false.
 - A is false but "R" is true.
- 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, the resistance of the thicker wire is (2001)
 - 5 ohms
 - 10 ohms
 - 20 ohms
 - 40 ohms

6. Along with Fluorescent tubes are fitted with a choke. (2000)

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

7. Think on the following statements : (1999)

A simple electrical bulb has a relatively short life because

- 1. The wire of the filament is not uniform
- 2. The bulb cannot be totally vacuumed
- 3. The supporting wires of the filament, melts at high temperature.

Which of the above are correct

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

8. A fuse is used in mains electric supply as a safety device. Which one of the following statements about the fuse is correct ? (1998)

- (a) It is connected in parallel with the main switch
- (b) It is made mainly from silver alloys
- (c) It must have a low melting point
- (d) It must have a very high resistance

9. A: The temperature of a metal wire rises when an electric current is passed through it.

R : Collision of metal atoms with each other releases heat energy.

(1998)

- (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.

Answer Key :

1. b 2. c 3. b 4. d 5. b 6. a 7. d

8. c 9. a

TIMES IAS ACADEMY

Modern Physics

1. What is the role of ultraviolet (UV) radiation in the water purification systems ? **(2012)**

1. It inactivates/kills the harmful microorganisms in water.
2. It removes all the undesirable odours from the water.
3. It quickens the sedimentation of solid particles, removes turbidity and improves the clarity of water.

Which of the statements given above is/are correct ?

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

2. Graphene is frequently in news recently. What is its importance ? **(2012)**

1. It is a two-dimensional material and has good electrical conductivity.
2. It is one of the thinnest but strongest materials tested so far.
3. It is entirely made of silicon and has high optical transparency.
4. It can be used as 'conducting electrodes' required for touch screens, LCDs and organic LEDs.

Which of the statements given above are correct?

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

3. A team of scientists at Brookhaven National Laboratory including those from India created the heaviest anti-matter (anti-helium nucleus). What is/are the implication/implications of the creation of anti-matter ? **(2012)**

1. It will make mineral prospecting and oil exploration easier and cheaper.

2. It will help probe the possibility of the existence of stars and galaxies made of anti-matter.

3. It will help understand the evolution of the universe.

Select the correct answer using the codes given below :

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

4. Electrically charged particles from space travelling at speeds of several hundred km/sec can severely harm living beings if they reach the surface of the earth. What prevents them from reaching the surface of the Earth ? **(2012)**

- (a) The earth's magnetic field diverts them towards its poles
(b) Ozone layer around the earth reflects them back to outer space
(c) Moisture in the upper layers of atmosphere prevents them from reaching the surface of the earth
(d) None of the statements (a), (b) and (c) given above is correct.

5. Which one of the following types of waves are used in a night vision apparatus ? **(2009)**

- (a) Radio waves (b) Microwaves
(c) Infra-red waves (d) None of the above

6. Which of the following pairs is/are correctly matched ? **(2008)**

Theory/Law	Associated Scientist
1. Continental Drift	- Edwin Hubble
2. Expansion of Universe	- Alfred Wegener
3. Photoelectric Effect	- Albert Einstein

Select the correct answer using the code given below :

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

7. **Assertion (A):** Radio waves bend in a magnetic field.

Reason (R): Radio waves are electromagnetic in nature. **(2008)**

- (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.
8. How can the height of a person who is six feet tall be expressed (approximately) in nanometers? **(2008)**
- (a) 183×10^6 nanometres
- (b) 234×10^6 nanometres
- (c) 183×10^7 nanometres
- (d) 234×10^7 nanometres
9. Which of the following types is used by computed tomography employed for visualisation of the internal structure of human body ?
- (a) X-ray
- (b) South waves
- (c) Magnetic resonance
- (d) Radioisotopes
10. Who among the following invented Lasers ? **(2005)**
- (a) Theodore Maiman
- (b) Denis Papin
- (c) William Morton
- (d) Francis Crick
11. Match List 1 with List II and select the correct answer using the codes given below the List: **(2001)**

List I (Characteristic)

A. Zero mass

List II (Particle)

1. Positron

- | | |
|----------------------|-------------|
| B. Fractional charge | 2. Neutrino |
| C. Fractional spin | 3. Quark |
| D. Integral spin | 4. Phonon |

Codes:

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

12. Consider the following statements : **(2001)**

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

13. Which one of the following is NOT radioactive? **(2001)**

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

14. Which one of the following does a TV remote control unit use to operate a TV set ? **(2000)**

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

15. Cobalt-60 is commonly used in radiation therapy because it merits **(1999)**

- (a) alpha rays (b) beta rays
(c) gamma rays (d) X-rays

16. Which one of the following elements is essential for the construction of nuclear reactors ? **(1998)**

- (a) Cobalt (b) Nickel
(c) Zirconium (d) Tungsten

17. Match the following : **(1998)**

Table-I

- A. Dr. RAja Ramanna
B. Dr. M.S. Swaminathan
C. Prof. U.R.Rao
D. Prof. Meghnath Saha

Table-II

1. Botany-Chemistry
2. Nuclear Physics
3. Thermodynamics & Astro Physics
4. Space Research
5. Agriculture

Codes:

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

18. The tendency of a liquid drop to contract and occupy minimum area is due to : (1997)
- (a) surface tension (b) viscosity
(c) density (d) vapour pressure
19. Which one of the following is a vector quantity? (1997)
- (a) Momentum (b) Pressure
(c) Energy (d) Work
20. The trail of a comet is directed away from the Sun because: (1997)
- (a) as the comet rotates around the Sun, the lighter mass of the comet is pushed away due to the centrifugal force alone
(b) as the comet rotates, the lighter mass of the comet is attracted by some star situated in the direction of its tail
(c) the radiation emitted by the sun exerts a radial pressure on the comet throwing its tail away from the Sun
(d) the tail of the comet always exists in the same orientation
21. A body standing at the point 'O' in the given diagram, throws a ball three times with the same force, but projecting it along different inclinations from the ground. The results of the throws have been pitted in the diagram. Which one of the following is a valid conclusion? (1997)
- (a) The larger the initial inclination, the longer the throw
(b) The larger the height reached, the longer the throw
(c) The larger the height reached, the shorter the throw
(d) The larger the initial inclination, the greater the height reached
22. The working principle of a washing machine:
- (a) centrifugation (b) dialysis
(c) reverse osmosis (d) diffusion

23. When a mirror is rotated by an angle θ the reflected ray will rotate by: **(1996)**

- (a) 2θ (b) $\theta/2$
(c) θ (d) 2θ

24. The nutritional deficiency condition that needs to be given top priority for remedial action in India today is: **(1996)**

- (a) Scurvy (b) Rickets
(c) Xerophthalmia (d) Pellagra

25. Living organisms require at least 27 elements of which 15 are metals. Among these, those required in major quantities include **(1996)**

- (a) potassium, manganese, molybdenum and calcium
(b) potassium, molybdenum, copper and calcium
(c) potassium, sodium, magnesium and calcium
(d) sodium, magnesium, copper and manganese

26. Total internal reflection can take place when light travels from: **(1996)**

- (a) diamond to glass (b) water to glass
(c) air to water (d) air to glass

27. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R): **(1996)**

Assertion (A): Transformer is useful for stepping up or stepping down voltages.

Reason (R): Transformer is a device used in D.C. circuits. In the context of the above two statements, which one of the following is correct?

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

28. The alpha particle carries two positive charges. Its mass is very nearly equal to that of: **(1996)**

(a) two protons

(b) an atom of helium

(c) sum of masses of two positrons and two neutrons

(d) two positrons as each positron carries a single positive charge

29. Consider the following statements: At the present level of technology available in India, solar energy can be conveniently used to: **(1996)**

1. supply hot water to residential buildings.

2. supply water for minor irrigation projects.

3. provide street lighting 4. electrify a cluster of villages and small towns,

(a) 1, 2, 3 and 4 are correct

(b) 2 and 4 are correct

(c) 1 and 3 are correct

(d) 1, 2 and 3 are correct

30. A simple machine helps a person in doing **(1996)**

(a) less work

(b) the same amount of work with lesser force

(c) the same amount of work slowly

(d) the same amount of work much faster

Answer Key :

1	A	2	B	3	B	4	A	5	C
6	B	7	A	8	C	9	A	10	A
11	A	12	B	13	D	14	A	15	B
16	C	17	C	18	A	19	A	20	C
21	C	22	A	23	D	24	C	25	C
26	A	27	C	28	B	29	A	30	b

TIMES IAS ACADEMY

SPACE PHYSICS

1. Who of the following scientists proved that the stars with mass less than 1.44 times the mass of the Sun end up as White Dwarfs when they die ? **(2009)**
 - (a) Edwin Hubble
 - (b) S. Chandrashekhar
 - (c) Stephen Hawking
 - (d) Steven Weinberg
2. A 'black hole' is a body in space which does not allow any radiation to come out. This property is due to its **(2000)**
 - (a) very small size
 - (b) very large size
 - (c) very high density
 - (d) very low density
3. One Astronomical Unit is the average distance between **(1998)**
 - (a) Earth and the Sun
 - (b) Earth and the Moon
 - (c) Jupiter and the Sun
 - (d) Pluto and the Sun
4. Consider the following statements regarding asteroids : **(1998)**
 1. Asteroids are rocky debris of varying sizes orbiting the Sun
 2. Most of the asteroids are small but some have diameter as large as **1000 km**
 3. The orbit of asteroids lies between the orbits of Jupiter and SaturnOf these statements:
 - (a) **1, 2 and 3** are correct
 - (b) **2 and 3** are correct
 - (c) **1 and 2** are correct
 - (d) **1 and 3** are correct

ANSWERS KEY

1. (b) 2. (c) 3. (a) 4. (c)

Physical Chemistry

1. Standard 18-carat gold sold in the market contains **(2004)**
 - (a) 82 parts gold and 18 parts other metals
 - (b) 18 parts gold and 82 parts other metals
 - (c) 18 parts gold and 6 parts other metals
 - (d) 9 parts gold and 15 parts other metals
2. 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

Kinetic Theory of Matter

3. Regarding the atom of a chemical element, the magnetic quantum number refers to **(2003)**
 - (a) orientation
 - (b) shape
 - (c) size
 - (d) spin

Periodic Table of Elements

4. A : In the periodic table of chemical elements, electron affinity is always found to increase from top to bottom in a group.
R : In a group, the atomic radii generally increase from top to bottom. **(2003)**
 - (a) Both A and R are true and R is the correct explanation of A
 - (b) Both A and R are 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
5. Consider the following statements with reference to the Periodic Table of chemical elements. **(2001)**

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

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

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

Radio Activity

6. Which one of the following is not radioactive ? **(2001)**
- (a) Astatine (b) Francium
(c) Tritium (d) Zirconium

Types of Chemical Solutions

7. Consider the following statements : **(2005)**
1. During the process of osmosis, the solvent travels from the concentrated solution to the dilute solution.
 2. In the reverse osmosis, external pressure is applied to the dilute solution.

Which of the statements given above is/are correct ?

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

8. Which one of the following statements is not correct ? **(2002)**
- (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 semipermeable membrane, water movement can be prevented by applying pressure to the solution
9. Soft drinks such as colas contain significant quantities of: **(2002,2000)**
- (a) Caffeine (b) Nicotine
(c) Tannin (d) Renin
10. Consider the following statements : **(2000)** 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

Chemical Bonding

11. With reference to ionic compounds, consider the following statements: **(2003)**
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) 1 (b) 2
(c) 1 and 2 (d) Neither 1 nor 2

Inorganic Chemistry

12. Indiscriminate disposal of used fluorescent electric lamps causes mercury pollution in the environment. Why is mercury used in the manufacture of these lamps? **(2010)**
- (a) A mercury coating on the inside of the lamp makes the light bright white.
 - (b) When the lamp is switched on, the mercury in the lamp causes for emission of ultra-violet radiations.
 - (c) When the lamp is switched on, it is the mercury which converts the ultra-violet energy into visible light.
 - (d) None of the statement given above is correct about the use of mercury in the manufacture of fluorescent lamps.
13. What are Rubies and Sapphires chemically known as ? **(2008)**
- (a) Silicon dioxide (b) Aluminium oxide
 - (c) Lead tetroxide (d) Boron nitride
14. Which one of the following is also called Stranger Gas ? **(2008)**
- (a) Argon (b) Neon
 - (c) Xenon (d) Nitrous oxide
15. Which one of the following is another name of RDX ? **(2007)**
- (a) Cyanohydrin (b) Dextran
 - (c) Cyclohexane (d) Cyclonite
16. Which one of the following non-metals is not a poor conductor of electricity ? **(2007)**
- (a) Sulphur (b) Selenium
 - (c) Bromine (d) Phosphorus
17. Which one among the following is called philosopher's wool ? **(2007)**
- (a) Zinc bromide (b) Zinc nitrate

- (c) Zinc oxide (d) Zinc chloride
18. Which one of the following does not contain silver ? **(2007)**
(a) Horn silver (b) German silver
(c) Ruby silver (d) Lunar caustic
19. Salts of which of the following elements provide colours to fireworks? **(2004)**
(a) Zinc and sulphur (b) Potassium and mercury
(c) Strontium and barium (d) Chromium and nickel
20. Which one of the following materials is very hard and very ductile ? **(2000)**
(a) Carborundum (b) Tungsten
(c) Cast iron (d) Nichrome
21. A : Sodium metal is stored under kerosene. **(1998)**
R : Metallic sodium melts when exposed to air.
(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.
22. Consider the following statements about acetylene. **(1998)**
1. It is used in welding industry.
2. It is a raw material for preparing plastics.
3. It is easily obtained by mixing silicon carbide and water.
- Of these statements :
- (a) 1 and 2 are correct (b) 1 and 3 are correct
(c) 2 and 3 are correct (d) 1,2 and 3 are correct

Electro Chemistry

23. In a dry cell (battery), which of the following are used as electrolytes ? **(2009)**
- (a) Ammonium chloride and Zinc chloride
 - (b) Sodium chloride and Calcium chloride
 - (c) Magnesium chloride and Zinc chloride
 - (d) Ammonium chloride and Calcium chloride
24. Aluminium surfaces are often 'anodized'. This means the deposition of a layer of **(2000)**
- (a) chromium oxide
 - (b) aluminium oxide
 - (c) nickel oxide
 - (d) zinc oxide
25. Which one of the following metals does not form amalgams ? **(1998)**
- (a) Zinc
 - (b) Copper
 - (c) Magnesium
 - (d) Iron

CHEMICAL COMPOUND

26. Chlorination is a process used for water purification. The disinfecting action of chlorine is mainly due to **(2010)**
- (a) The formation of hydrochloric acid when chlorine is added to water
 - (b) The formation of hypochlorous acid when chlorine is added to water
 - (c) The formation of nascent oxygen when chlorine is added to water
 - (d) The formation of hydrogen when chlorine is added to water
27. Consider the following :
1. Oxides of Hydrogen
 3. Oxides of Sulphur

Which of the above causes/cause acid rain ?

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

28. Consider the following statements : **(2005)**

1. Anhydrous sodium carbonate is commonly known as baking soda.
2. Baking soda is used in fire extinguishers.
3. Bleaching powder is manufactured in Hasenclever plant

Which of the statements given above is/are correct ?

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

29. Consider the following statements : **(2004)** 1. Baking soda is used in fire extinguishers

- (b) Quicklime is used in the manufacture of glass
(c) 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 (d) 1,2 and 3

30. Which one of the following statements is NOT correct ? **(2003)**

- (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

31. Match List I with List II and select the correct answer : **(1999)**

Codes:

- A B C D**

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

33. Match List I with List II and select the correct answer : (1998)

List-I

- A. Potassium bromide
- B. Potassium nitrate
- C. Potassium sulphate
- D. Monopotassium tartrate

List-II

- 1. Fertiliser
- 2. Photography
- 3. Bakery
- 4. Gunpowder **Codes:**

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

34. Match List-I with List-II and select the correct answer : (1998)

List-I

- A. Blue vitriol
- B. Epsom salt
- C. Baking soda
- D. Caustic soda

List-II

- 1. Sodium bicarbonate
- 2. Sodium hydroxide
- 3. Magnesium sulphate
- 4. Copper sulphate **Codes:**

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

List-I

- A. Diamond
- B. Marble
- C. Sand
- D. Ruby

List-II

- 1. Calcium
- 2. Silicon
- 3. Aluminium
- 4. Carbon

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

Common Name

32. Match List-I with List-II and select the correct answer : **(2000)**

List-I

- A. German Silver
- B. Solder
- C. Bleaching powder
- D. Hypo

List-II

- 1. Tin
- 2. Nickel
- 3. Sodium
- 4. Chlorine

Detergents and Soaps

35. Consider the following statements: **(2003)**

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

36. A : Synthetic detergents can lather well in hard water.

R : Synthetic detergents form soluble calcium and magnesium salts with hard water. **(2002)**

- (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.

Acids and Bases

37. An aqueous solution of copper sulphate is acidic in nature because the salt undergoes **(2001)**

- (a) dialysis (b) electrolysis
- (c) hydrolysis (d) photolysis

38. When ants bite, they inject

- (a) glacial acetic acid (b) methanol
- (c) formic acid (d) stearic acid

39. Consider the following statements : **(1999)**

Glass can be etched or scratched by

- 1. diamond 2. hydrofluoric acid
- 3. aquaregia 4. cone, sulphuric acid

Codes:

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

40. A: To dilute sulphuric acid, acid is added to water and not water to acid.

R : Specific heat of water is quite large. (1999)

- (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.

41. A : Formic acid is a stronger acid than acetic acid.

R : Formic acid is an organic acid. (1998)

- (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.

Oxidation and Reduction

42. Match List-I with List-II and select the correct answer : (2002)

List-I (Oxidation no.) List-II (The element)

- | | |
|--------------------------|---------------------|
| A. 2 of Mn in MnO_2 | 1. Oxidation number |
| B. 3 of S in $H_2S_2O_7$ | 2. Oxidation number |
| C. 4 of Ca in CaO | 3. Oxidation number |
| D. 6 of Al in $NaAlH_4$ | 4. Oxidation number |

Codes:

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

Industrial Chemistry

43. Consider the following : **(2011)**

1. Carbon dioxide
2. Oxides of Nitrogen
3. Oxides of Sulphur

Which of the above is/are the emission/emission from coal combustion at thermal power plants ?

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

44. Consider the following chemicals : **(2006)**

1. Benzene
2. Carbon tetrachloride
3. Sodium carbonate
4. Trichloroethylene

Which of the above is/are used as dry cleaning chemicals?

- (a) 1 (b) 2
(c) 1,2and4 (d) 1,2, 3 and 4

45. A: Coal-based thermal power stations contribute to acid-rain.

R : Oxides of carbon are emitted when coal burns. **(2003)**

- (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.

46. Most of the explosions in mines occur due to the mixing of **(2000)**

- (a) hydrogen with oxygen
- (b) oxygen with acetylene
- (c) methane with air

- (d) carbon dioxide with ethane
47. A: Phenyl is used as a household germicide.
R: Phenyl is a phenol derivative and phenol is an effective germicide. **(1998)**
- (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.

Metallurgy

48. Which one of the following pairs of metals constitutes the lightest metal and the heaviest metal, respectively ? **(2008)**
- (a) Lithium and mercury
(b) Lithium and osmium
(c) Aluminium and osmium
(d) Aluminium and mercury
49. Match List-I (Industrial processes) with List-II (Industry with which associated) and select the correct answer. **(2000)**

List-I

- A. Cracking
B. Smelting
C. Hydrogenation
D. Vulcanization

List-II

1. Rubber
2. Petroleum
3. Copper
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

50. Consider the following statements : **(1998)**

Coke is one of the materials of the charge added to blast furnace for the production of steel/iron. Its function is to:

1. act as the reducing agent
2. remove silica associated with the iron ore
3. function as fuel, to supply heat
4. act as an oxidizing agent

Of these statements which are correct?

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

Organic Chemistry Hydrocarbons

51. What is Bisphenol A (BPA)? **(2008)**

- (a) A medical test for detecting cancer
- (b) A test for testing the use of drugs to improve performance by athletes
- (c) A chemical used for the development of food-packaging materials
- (d) A special type of alloy steel

52. Consider the following statements : **(2005)**

1. Liquefied Natural Gas (LNG) is liquefied under extremely cold temperatures and high pressure to facilitate storage or transportation in specially designed vessels.
2. First LNG terminal in India was built in Hassan.
3. Natural Gas Liquids (NGL) are separated from LPG and these include ethane, propane, butane and natural gasoline.

Which of the statements given above is/are correct ?

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

53. A: The main constituent of the Liquefied Petroleum Gas is methane.

R : Methane can be used directly for burning in homes and factories where it can be supplied through pipelines. **(2005)**

- (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.

54. Match List-I (Fuel Gases) with List-II (Major Constituents) and select the correct answer using the codes given below the Lists : **(2004)**

List-I

- A. CNG
B. Coal gas
C. LPG
D. Water gas

List-II

1. Carbon monoxide, Hydrogen
2. Butane, Propane
3. Methane, Ethane
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 |

55. Which one of the following is the correct sequence in increasing order of molecular weights of the hydrocarbons? **(2001)**

- (a) Methane, ethane, propane and butane

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

Coal, Petroleum and Natural Gases

56. Which one of the following types of coal contains a higher percentage of carbon than the rest ? **(1999)**
- (a) Bituminous coal
 - (b) Lignite
 - (c) Peat
 - (d) Anthracite

Bio-Chemistry

Environmental Chemistry and Pollution

57. Which of the following is/are example/examples of chemical change ? **(2014)**
1. Crystallization of chloride
 2. Melting of ice
 3. Souring of milk
- Select the correct answer using the code given below :
- (a) 1 and 2 only
 - (b) 3 only
 - (c) 1,2 and 3
 - (d) None
58. Mixture of which one of the following pairs of gases is the cause of occurrence of most of the explosions in mines ? **(2008)**
- (a) Hydrogen and Oxygen
 - (b) Oxygen and acetylene
 - (c) Methane and air
 - (d) Carbon dioxide and methane
59. Which one of the following is produced during the formation of photochemical smog ? **(2003)**

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

60. The water pollution in river is measured by the dissolved amount of **(1998)**

- (a) chlorine (b) ozone
(c) nitrogen (d) oxygen

Food Chemistry

61. A company marketing food products advertises that its items do not contain trans-fats. What does this campaign signify to the customers? **(2011)**

1. The food products are not made out of hydrogenated oils.
2. The food products are not made out of animal fats/ oils.
3. The oils used are not likely to damage the cardiovascular health of the consumers.

Which of the statements given above is/are correct?

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

62. Aspartame is an artificial sweetener sold in the market. It consists of amino acids and provides calories like other amino acids. Yet, it is used as a low-calorie sweetening agent in food items. What is the basis of this use ? **(2011)**

- (a) Aspartame is as sweet as table sugar, but unlike table sugar, it is not readily oxidized in human body due to lack of requisite enzymes.
- (b) When aspartame is used in food processing, the sweet taste remains, but it becomes resistant to oxidation.

- (c) Aspartame is as sweet as sugar, but after ingestion into the body, it is converted into metabolites that yield no calories.
- (d) Aspartame is several times sweeter than table sugar, hence food items made with small quantities of aspartame yield fewer calories on oxidation.

63. Consider the following : **(2009)**

1. Camphor
2. Chicory
3. Vanilla

Which of the above is/are plant product(s)

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

64. A: Unsaturated fats are more reactive compared with the saturated fats.

R : Unsaturated fats have only single bonds in their structure.

(2003)

- (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.

65. A : Drinking of whisky increase the frequency of urination.

R : Alcohol intake speeds up the secretion of vasopressin in the body. **(2002)**

- (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.

Polymers and Plastics

66. Assertion (A): Cellulose is used in making shatter-proof glass.
(2006)

Reason (R): Polysaccharides are not soluble in water.

- (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.

Biochemistry and Life Process

67. The major chemical compound found in human kidney stone is
(2000,1998)

- (a) uric acid
- (b) calcium carbonate
- (c) calcium oxalate
- (d) calcium sulphate

Medicinal Chemistry

68. A small pouch containing silica gel is often found in bottles of medicine in tablet or powder form because silica gel **(2000)**

- (a) kills bacteria
- (b) kills germs and spores
- (c) absorbs moisture
- (d) absorbs all gases present inside the bottle

69. The stones formed in human kidney consist mostly of **(2000,1998)**

- (a) calcium oxalate
- (b) sodium acetate
- (c) magnesium sulphate
- (d) calcium

70. Match List-I (Drugs/Chemicals) with List-II (their uses) and select the correct answer using the codes given below the lists : **(1999)**

List-I	List-II
A. Atropine	1. Local anaesthesia
B. Ether	2. Heart trouble
C. Nitroglycerine	3. Dilation of pupil
D. Pyrethrin	4. Mosquito control

Codes:

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

71. Cobalt-60 is commonly used in radiation therapy because it emits: **(1999)**

- (a) alpha rays (b) beta rays
- (c) gamma rays (d) X-rays

72. The characteristic odour of garlic is due to: **(1997)**

- (a) a chloro compound (b) a sulphur compound
- (c) a fluorine compound (d) acetic acid

73. Which one of the following is paramagnetic in nature? **(1997)**

- (a) Iron (b) Hydrogen
- (c) Oxygen (d) Nitrogen

74. Which one of the following has the highest fuel value? **(1997)**
(a) Hydrogen (b) Charco
(c) Natural gas (d) Gasoline
75. Which one of the following is cultivated by transplanting seedlings? **(1997)**
(a) Maize (b) Sorghum
(c) Onion (d) Soyabeen
76. Which one of the following is used as an anti-freeze for the automoblie engines? **(1997)**
(a) Propyl alcohol (b) Ethanol
(c) Methanol (d) Ethylene glycol
77. Arteries supplying blood to the heart are called: **(1997)**
(a) Carotid arteries (b) Hepatic arteries
(c) Coronary arteries (d) Pulmonary arteries
78. Recommended daily intake of proteins for a moderately active woman is **(1997)**
(a) 30 g (b) 37 g
(c) 40 g (d) 46 g
79. Which one of the following is present in the largest amount in terms of percent by mass in the earth's crust? **(1997)**
(a) Silicon (b) Oxygen
(c) Carbon (d) Calcium

Nuclear Chemistry

80. India-base Neutrino Observatory is included by the Planning Commission as a mega science project under the 11th Five-Year Plan. In this context, consider the following statements: **(2010)**

1. Neutrinos are chargeless elementary particles that travel close to the speed of light
2. Neutrinos are created in nuclear of beta decay
3. Neutrinos have a negligible, but nonzero mass
4. Trillions of Neutrinos pass through human body every second

Which of the statements given above are correct?

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

81. Which one of the following is used as an explosive ? **(2009)**

- (a) Phosphorus trichloride
(b) Mercuric oxide
(c) Graphite
(d) Nitroglycerine

82. Consider the following statements:

In a nuclear reactor, self-sustained chain reaction is possible, because : **(2001)**

1. more neutrons are released in each of the fission reaction
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

83. Which one of the following elements is essential for the construction of nuclear reactors ? **(1998)**

- (a) Cobalt (b) Nickel
(c) Zirconium (d) Tungsten

Applied Chemistry

84. Which one of the following statements is correct? **(2003)**
- (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

85. Consider the following organizations. **(2001)**
- 1. Atomic Minerals Directorate for Research and Exploration
 - 2. Heavy Water Board
 - 3. Indian Rare Earths Limited
 - 4. Uranium Corporation of India

Which of these is/are under the department of atomic energy ?

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

86. A : Large cold storage plants use ammonia as refrigerant while domestic refrigerators use chlorofluorocarbons.

R : Ammonia can be liquified at ambient temperatures at low pressures. **(2000)**

- (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.

87. The offending substance in the liquor tragedies leading to blindness etc. is : **(1996)**

- (a) ethyl alcohol
- (b) amyl alcohol
- (c) benzyl alcohol
- (d) methyl alcohol

88. Which one of the following elements is alloyed with iron to produce steel which can resist high temperatures and also have high hardness and abrasion resistance?(1996)
- (a) Aluminium (b) Chromium
(c) Nickel (d) Tungsten
89. A rectangle has a perimeter of 50 meters. If its length is 13 meters more than its breadth, then its area is: (1996)
- (a) 124 m^2 (b) 144 m^2
(c) 114 m^2 (d) 104 m^2
90. People drinking water from a shallow handpump are likely to suffer from all of the following diseases except :(1996)
- (a) Cholera (b) Typhoid
(c) Jaundice (d) Fluorosis
91. Besides proteins and carbohydrates, other elements of nutritional value found in milk include: (1996)
- (a) Calcium, potassium and iron
(b) Calcium and potassium
(c) Potassium and iron
(d) Calcium and iron
92. Which one of the following is not an essential micronutrient for plants? (1996)
- (a) Boron (b) Zinc
(c) Sodium (d) Copper

ANSWERS KEY

1. (c)	2. (c)	3. (a)	4. (d)	5. (b)
6. (d)	7. (d)	8. (b)	9. (a)	10. (d)
11. (a)	12. (b)	13. (b)	14. (c)	15. (d)
16. (b)	17. (c)	18. (b)	19. (c)	20. (d)
21. (c)	22. (a)	23. (c)	24. (b)	25. (b)
26. (b)	27. (d)	28. (b)	29. (d)	30. (a)
31. (d)	32. (d)	33. (a)	34. (d)	35. (a)
36. (a)	37. (c)	38. (c)	39. (c)	40. (b)
41. (b)	42. (a)	43. (d)	44. (d)	45. (b)
46. (c)	47. (a)	48. (b)	49. (b)	50. (c)
51. (c)	52. (a)	53. (d)	54. (b)	55. (a)
56. (d)	57. (b)	58. (c)	59. (c)	60. (d)
61. (c)	62. (d)	63. (d)	64. (c)	65. (a)
66. (c)	67. (c)	68. (c)	69. (a)	70. (d)
71. (c)	72. (b)	73. (c)	74. (a)	75. (c)
76. (d)	77. (d)	78. (d)	79. (b)	80. (d)
81. (d)	82. (d)	83. (c)	84. (a)	85. (d)
86. (b)	87. (d)	88. (b)	89. (c)	90. (d)
91. (b)	92. (c)			