

PHYSICS

1. While using an electric bulb the reflector for street lighting should be a
 - A) Concave mirror
 - B) Convex mirror
 - C) Cylindrical mirror
 - D) Plane mirror
2. Sunlight filtering through a tree often makes circular patches on the ground because :
 - A) The space through which light penetrates is round
 - B) The sun is round
 - C) Light is transmitted through wave motion
 - D) Due to diffraction of light
3. A ray of light passing through a prism having refractive index of 1.414 suffers minimum deviation. If the angle of incidence is double the angle of refraction within the prism, the angle of prism is :
 - A) 30°
 - B) 45°
 - C) 60°
 - D) 90°
4. A diode as rectifier converts :
 - A) AC into DC
 - B) DC into AC
 - C) Varying DC into constant DC
 - D) High voltage into low voltage
5. A metal surface ejects electrons when hit by green light but none when hit by yellow light. The electrons will also be ejected when the surface is hit by :
 - A) Red light
 - B) Blue light
 - C) Heat rays
 - D) Infrared light
6. In terms of magnetic properties, oxygen belongs to :
 - A) Non Magnetic Materials
 - B) Ferromagnetic Materials
 - C) Paramagnetic Materials
 - D) Diamagnetic Materials
7. A lens behaves as converging lens in air and diverging lens in water. The refractive index of the material is :
 - A) Equal to unity
 - B) Equal to 1.33
 - C) Between unity and 1.33
 - D) Greater than 1.33
8. The resolving power of the telescope depends upon :
 - A) The focal length of the eye lens
 - B) The focal length of the objective
 - C) The length of the telescope tube
 - D) Aperture of the objective length
9. Which of the following have maximum wavelength?
 - A) X rays
 - B) Radio waves
 - C) UV rays
 - D) IR rays
10. Two coherent sources of intensity I_1 and I_2 produce an interference pattern. The maximum intensity in the interference pattern is :
 - A) $I_1 + I_2$
 - B) $I_1^2 + I_2^2$
 - C) $(I_1 + I_2)^2$
 - D) $(\sqrt{I_1} + \sqrt{I_2})^2$

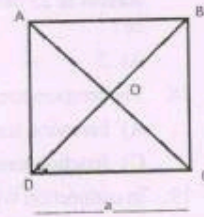
11. The point charges $4q, -2q, +q, -3q$ are placed at the corners of square of side a as shown in figure the potential at the point O is :

A) Zero

B) $\frac{1}{4\pi\epsilon_0} \left(\frac{10q}{a} \right)$

C) $\frac{1}{4\pi\epsilon_0} \left(\frac{2\sqrt{2}q}{a} \right)$

D) $\frac{1}{4\pi\epsilon_0} \left(\frac{2q}{a} \right)$



12. An electric dipole of moment p is placed normal to the lines of force of electric field E , then work done in deflecting it through 180° is

A) pE

B) $+2pE$

C) $-2pE$

D) Zero

13. There is a solid sphere of radius R of metal having uniformly distributed charge. What is relation between electric field E and distance r from centre ($r > R$)?

A) $E \propto r^{-2}$

B) $E \propto r^{-1}$

C) $E \propto r$

D) $E \propto r^2$

14. Which of the following is NOT the property of a metallic substance?

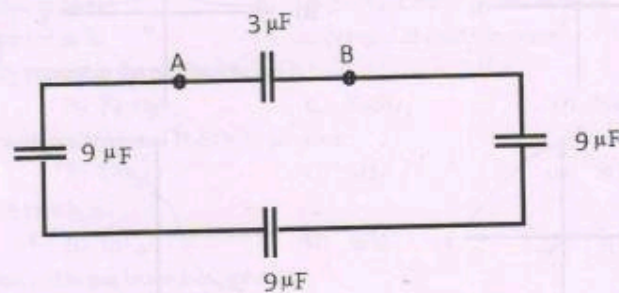
A) Good conductor

B) Opaque to light

C) Non crystalline

D) Involve non directional bonds

15. The equivalent capacitance between A and B in the following figure is :



A) $51/30 \mu F$

B) $6 \mu F$

C) $30 \mu F$

D) $12 \mu F$

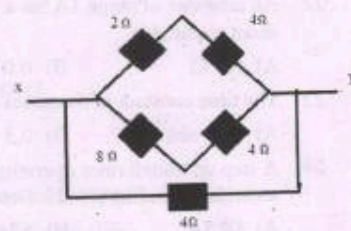
16. Find the equivalence resistance in the point x and y :

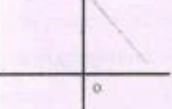
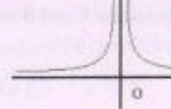
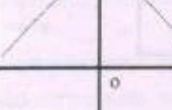
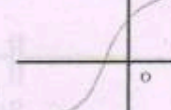
A) 2Ω

B) 8Ω

C) 6Ω

D) 4Ω



- A) 
- B) 
- C) 
- D) 

- A) $0.1\ \Omega$ B) $0.01\ \Omega$ C) $0.9\ \Omega$ D) $1\ \Omega$
- The time constant of the series combination of inductor $5\ \text{H}$ and resistance $10\ \Omega$ is
- A) $0.02\ \text{sec}$ B) $0.5\ \text{sec}$ C) $2\ \text{sec}$ D) $50\ \text{sec}$
- A step up transformer operating on 230V line supplies current to the load 2A . The ratio secondary winding is $1:25$. Determine the primary current :
- A) 12.5A B) 50A C) 8.8A D) 25A

25. The order of the size of the nucleus and Bohr radius of an atom respectively are
- A) 10^{-14}m , 10^{-10}m B) 10^{-14}m , 10^{-8}m
 C) 10^{-20}m , 10^{-10}m D) 10^{-11}m , 10^{-10}m

CHEMISTRY

26. Name of the phenomenon wherein mechanical stress causes the production of electricity is?
- A) Pyroelectric effect B) Photoelectric effect
 C) Piezoelectric effect D) Ferroelectric effect
27. For two solutions of same concentration, the osmotic pressure at 327°C is twice that at :
- A) 127°C B) 27°C C) 227°C D) 17°C
28. When lead storage battery is charged
- A) Lead dioxide dissolves
 B) Sulphuric acid is regenerated
 C) Lead electrode becomes coated with lead sulphate
 D) The concentration of H_2SO_4 decreases.
29. The rate constant for a chemical reaction $\text{A} \rightarrow \text{B}$ is 0.25 s^{-1} . What will be rate constant if concentration of A is reduced to half?
- A) 0.25 s^{-1} B) 0.30 s^{-1} C) 0.075 s^{-1} D) 2.25 s^{-1}
30. Butter is a colloid form in which :
- A) Fat is dispersed in casein B) Fat globules are dispersed in water
 C) Water is dispersed in fat D) Suspension of casein in water
31. The chief impurity present in the red bauxite ore is :
- A) SiO_2 B) Fe_2O_3 C) K_2SO_4 D) NaF
32. HCOOH reacts with concentrated H_2SO_4 to produce
- A) CO B) CO_2 C) SO_2 D) SO_3
33. Hybridization of S in SO_3 is
- A) sp^2 B) sp^3 C) sp^3d D) sp^3d^2
34. The most abundant noble gas in the atmosphere is ;
- A) He B) Ne C) Xe D) Ar
35. The shape of XeOF_2 on the basis of VSEPR theory is
- A) See saw B) V-shaped
 C) Trigonal planar D) T-shaped
36. Which of the following transition metal shows only +3 oxidation state?
- A) Ce B) Pt C) Gd D) Ni
37. IUPAC name of $\text{K}_3[\text{Fe}(\text{CN})_6]$ is :
- A) Potassium hexacyanoferrate (II) B) Potassium hexacyanoferrate (III)
 C) Potassiumhexacyanoiron (II) D) Potassium hexacyanoiron (III)

38. Which is a naturally occurring polymer?
 A) Nylon B) Protein C) Bakelite D) Terylene
39. Which of the following does not give a silver mirror test with Tollen's reagent?
 A) Lactose B) Sucrose C) Glucose D) All of them
40. α and β Glucose differ with respect to position of OH group at :
 A) Carbon α and β to aldehyde group B) Carbon number 3
 C) Carbon number 1 D) All the carbons
41. Denaturation of proteins effect its :
 A) Tertiary structure B) Secondary structure
 C) Both secondary and tertiary structure D) Only primary structure
42. *o*-Nitrophenol is steam volatile while *p*-nitrophenol is not. This is due to :
 A) Intra-molecular H-bonding in *p*-nitrophenol.
 B) Intra-molecular H-bonding in *o*-nitrophenol.
 C) Inter-molecular H-bonding in *o*-nitrophenol.
 D) Higher acidic nature of *o*-nitrophenol.
43. *p*-Bromophenol can be prepared from phenol by reaction with:
 A) Aqueous Br_2 B) Br_2 in presence of sunlight
 C) Br_2 in presence of FeCl_3 D) None of these
44. Reaction of ethylamine with chloroform in alcoholic KOH provides :
 A) Methanol B) CH_3NC C) $\text{C}_2\text{H}_5\text{NC}$ D) $\text{C}_2\text{H}_5\text{CN}$
45. When aniline is treated with bromine water, it yields:
 A) *o*-bromoaniline B) *p*-bromoaniline
 C) Both (A) and (B) D) 2,4,6-tribromoaniline
46. When a mixture of benzaldehyde and formaldehyde is treated with concentrated NaOH solution, the product is :
 A) Sodium benzoate and benzyl alcohol
 B) Sodium benzoate and methyl alcohol
 C) Sodium formate and benzyl alcohol
 D) Sodium formate and methyl alcohol
47. Phenol is formed by decarboxylation of :
 A) Benzoic acid B) Salicylic acid
 C) Phthalic acid D) All of these
48. Which of the following reagents can distinguish $\text{C}_2\text{H}_5\text{OH}$ from CH_3OH ?
 A) H_2O B) NH_3 C) $\text{I}_2 + \text{KOH}$ D) HCl
49. Bakelite is obtained from phenol by condensation reaction with
 A) Ethanal B) Methanal
 C) Vinyl chloride D) Ethylene glycol

50. A compound 'X' on heating with soda lime gives ethane, X is :
A) Ethanoic acid B) Propanoic acid
C) Methanoic acid D) Ethyl acetate

BIOLOGY

51. The endosperm cells in angiosperms are :
A) Haploid B) Diploid C) Triploid D) Tetraploid
52. The semi dwarf wheat which was instrumental in increasing wheat production was developed by :
A) Paul Ehrlich B) Kurien
C) Edward Jenner D) Norman E. Borlaugh
53. Anthesis is :
A) Formation of Pollen B) Development of Anther
C) Reception of Pollen by stigmas D) Opening of flower bud
54. An organic substance which cannot be degraded by any enzyme and extreme of environment :
A) Sporopollenin B) Lignin C) Cuticle D) Cellulose
55. Enzyme required for polymerase chain reaction is :
A) RNA polymerase B) Ribonuclease
C) Taq polymerase D) Endonuclease
56. Who discovered jumping gene in Maize :
A) Khorana B) Morgan
C) Mc Clintock D) Beadle and Tatum
57. Nucleosome contains :
A) Only histones B) Both DNA and histones
C) Only DNA D) Both DNA and RNA
58. DNA synthesis during replication :
A) Discontinuous B) Continuous
C) Semi-discontinuous D) None of above
59. The term molecular scissors refers to :
A) DNA polymerases B) RNA polymerases
C) Restriction endonucleases D) DNA ligases
60. In tissue culture shoot system is induced by :
A) IAA B) ABA C) Kinetin D) GA3
61. First transgenic plant released for commercial use was :
A) Bt Cotton B) Tobacco
C) Golden rice D) Solan gola

62. Restriction enzymes are used to cut :
 A) Single stranded RNA B) Double stranded DNA
 C) Single stranded DNA D) Double stranded RNA
63. DNA parts which can switch their positions are :
 A) Cistrons B) Transposons C) Introns D) None of these
64. Which extra embryonic membrane in humans prevent desiccation of the embryo inside the uterus :
 A) Allantois B) Yolk sac C) Amnion D) Chorion
65. Allopatric speciation is due to geographical separation of :
 A) Species B) Population C) Plants D) Animals
66. Entire alimentary canal can be regenerated by :
 A) Amphibians B) Birds C) Fish D) Sea cucumber
67. Effect of alcohol is :
 A) Liver Cirrhosis B) Kidney Failure
 C) Insomnia D) All of the above
68. The amount and distribution of yolk in egg affects :
 A) Number of blastomeres produced B) Pattern of cleavage
 C) Fertilization D) Formation of zygote
69. Lactation in sterile cows is induced by :
 A) Stilbesterol B) Vitamin B12
 C) Gonadotropin D) LH
70. A sex linked disorder is :
 A) Albinism B) Phenylketonuria
 C) Haemophilia D) Sickle cell anaemia
71. The name "honey stomach" in bees is applied for :
 A) Crop B) Stomach C) Pharynx D) Abdomen
72. Mammals have originated from which of the following :
 A) Pisces B) Amphibia C) Reptilia D) Aves
73. Widal test is for :
 A) Malaria B) Typhoid C) Pneumonia D) Jaundice
74. Which immunoglobulin is present in mother's milk :
 A) IgA B) IgD C) IgG D) IgE
75. Lake ecosystem is
 A) Artificial B) Natural C) Both (A) and (B) D) None

GENERAL AWARENESS OF THE SUBJECT (Physiotherapy)

76. Name the group of muscles at the front of thigh?
A) Quadriceps B) Hamstrings C) Calf D) Pectorals
77. The basic unit of contraction is?
A) Myosin B) Actin C) Z lines D) Sarcomere
78. Which of the following is the property of a cardiac cell to initiate and fire an action potential on its own without external stimulation?
A) Selectivity B) Spontaneity C) Automaticity D) Conductance
79. This is an explanation of how muscle contracts?
A) Lock and key hypothesis B) Cell theory
C) Mendels law D) Sliding filament theory
80. A cord or strap of dense tissues that connect a muscle to bone is called?
A) Tendon B) Bursa C) Ligament D) Arthritis
81. Which of the following does not show rapid initial depolarization at the start of an action potential?
A) SA node B) Atrial muscle C) Purkinje fibres D) Bundle of His
82. Which of the following pair is incorrect?
A) Pwave- Atrial depolarization
B) QRS complex- Ventricular depolarization
C) T wave- Ventricular repolarization
D) QT interval- Measure of duration of atrial action potential
83. Which of the following blood vessel has greatest compliance?
A) Arteries B) Veins C) Arterioles D) Capillaries
84. Poliomyelitis is caused by viral infection in?
A) Posterior horn cells B) Anterior horn cells
C) Muscle D) Peripheral nerve
85. Identify the category of drug which act to relieve pain?
A) Analgesic B) Antibiotic C) Anticoagulant D) Antidiuretic
86. You are likely to see a physiotherapist to recover from?
A) Depression B) Illness C) Injury D) Drug abuse
87. Proportion of inorganic to organic matter in the bones is?
A) 3:1 B) 2:1 C) 1:1 D) 4:1
88. Condylar joints are?
A) Uniaxial B) Biaxial C) Multiaxial D) Symphysis

89. A 'motor unit' is?
- A) Spinal segment with all the muscles it supplies
 - B) A gamma neuron with all the muscle spindles it innervates
 - C) An alpha motor neuron with all the muscle fibers it innervates
 - D) A nerve with all the muscles it innervates
90. The deficiency of Vitamin B 1 leads to?
- A) Scurvy
 - B) Beri-beri
 - C) Pellagra
 - D) Night blindness
91. Number of spinal nerves in cervical region is?
- A) 7
 - B) 8
 - C) 6
 - D) 9
92. One of the following lymphoid tissues has both afferent and efferent lymphatics?
- A) Thymus
 - B) Spleen
 - C) Tonsil
 - D) Lymph node
93. Ruffini endings are sensitive to?
- A) Heat
 - B) Deep pressure
 - C) Cold
 - D) Pain
94. Which of the following cells produce antibiotics?
- A) Plasma cells
 - B) Adipocytes
 - C) Macrophages
 - D) Mast cells
95. Which of the following ligament is chiefly elastic in nature?
- A) Ligamentumflava
 - B) Ligamentum patellae
 - C) Capsular ligament
 - D) Deltoid ligament
96. The chest X-ray is mostly taken on?
- A) AP view
 - B) Oblique view
 - C) Lateral view
 - D) PA view
97. Undue stretching and tearing of the fibers of a ligament due to injury is known as?
- A) Sprain
 - B) Fracture
 - C) Strain
 - D) Dislocation
98. What is a common skiing/snowboarding injury?
- A) Knee ligament injury
 - B) Tennis elbow
 - C) Frozen shoulder
 - D) Carpal tunnel syndrome
99. Patients with which type of conditions are treated by physiotherapists?
- A) Sports injuries
 - B) Back pain
 - C) Arthritis
 - D) All of the above
100. Which one of the following produces most radiopaque shadow on X-ray film?
- A) Enamel of tooth
 - B) Muscle
 - C) Bone
 - D) Gas