

Sample Paper (B.Sc. Biological Science)

Q. N	Question	Option A	Option B	Option C	Option D
1	Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells?	Golgi bodies	Polysomes	Endoplasmic reticulum	Peroxisomes
2	The process of growth is maximum during	Dormancy	Senescence	Lag phase	Log phase
3	Chiasmata formation in meiosis occurs during	Zygotene	Pachytene	Diplotene	Diakinesis
4	Which of the following is correct about viroids?	They have DNA with protein coat	They have free DNA without protein coat	They have RNA with protein coat	They have free RNA without protein coat
5	Plant hormone that causes fruits to ripen	Methanol	Ethylene	Abscisic acid	Gibberellic acid
6	Bt cotton variety that was developed by the introduction of toxin gene of <i>Bacillus thuringiensis</i> (Bt) is resistant to	Plant nematodes	Insect predators	Insect pests	Fungal diseases
7	The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are	Ammonia and oxygen	Ammonia and hydrogen	Ammonia alone	Nitrate alone
8	Which of the following regions of the world exhibits highest species diversity?	Himalayas	Amazon forests	Western Ghats of India	Madagascar
9	Which one of the following is the most abundant protein in the animals?	Collagen	Insulin	Haemoglobin	Lectin
10	Which of the following is not an attribute of a population?	Mortality	Natality	Sex ratio	Species interaction

11	Exploration of molecular, genetic and species level diversity for novel products of economic importance is known as:	Bioprospecting	Biopiracy	Bioenergetics	Bioremediation
12	DNA precipitation out of a mixture of biomolecules can be achieved by treatment with	Methanol at room temperature	Chilled ethanol	Isopropanol	Chloroform
13	Which structure(s) of proteins remain(s) intact during denaturation process?	Primary structure only	Secondary structure only	Both secondary and tertiary structures	Tertiary structure only
14	Which of the following is an	Polyblend	Electrostatic precipitator	Burning in the absence of oxygen	Burying 500 m deep below soil surface
15	If an agricultural field is liberally irrigated for a prolonged period of time, it is likely to face a problem of :	Acidity	Alkalinity	Salinity	Metal toxicity
16	What will be the direction of flow of water when a plant cell is placed in a hypotonic solution?	No flow of water in any direction	Water will flow in both directions	Water will flow out of the cell	Water will flow into the cell
17	Where is the respiratory electron transport system (ETS) located in plants?	Intermembrane space	Mitochondrial matrix	Outer mitochondrial membrane	Inner mitochondrial membrane
18	The maximum volume of air a person can breathe in after a forced expiration is known as :	Total Lung Capacity	Expiratory Capacity	Vital Capacity	Inspiratory Capacity
19	“World Environment Day” is celebrated on	22-May	5-Jun	16-Sep	22-Mar
20	Expressed Sequence Tags (ESTs) refers to:	Genes expressed as RNA	Novel DNA sequences	DNA polymorphism	Polypeptide expression

21	The Earth summit held in Rio de Janeiro in 1992 was called:	To assess threat posed to native species by invasive weed species	For immediate steps to discontinue use of CFCs that were damaging the ozone layer	For conservation of biodiversity and sustainable utilization of its benefits	To reduce CO ₂ emissions and global warming
22	Diabetes mellitus is caused due to deficiency of :	Thyroxin	Insulin	Growth Hormones	Corticoids
23	If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately	2.2 meters	2.7 meters	2.0 meters	2.5 meters
24	Which of the following is not a secondary metabolite in plants?	Phenols	Flavonoids	Alkaloids	Glucose
25	Cells in G ₀ phase:	Suspend the cell cycle	Terminate the cell cycle	Exit the cell cycle	Enter the cell cycle
26	Which of the following statements is incorrect?	Infective constituent in viruses is the protein coat	Prions consist of abnormally folded proteins	Viroids lack a protein coat	Viruses are obligate parasites
27	Which of the following ecological pyramids is generally inverted?	Pyramid of biomass in a forest	Pyramid of biomass in a sea	Pyramid of numbers in grassland	Pyramid of energy
28	Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?	Industrial oven	Bioreactor	BOD incubator	Sludge digester
29	Which of the statements given below is not true about formation of Annual Rings in trees?	Activity of cambium depends upon variation in climate.	Annular ring is a combination of spring wood and autumn wood produced in a year.	Differential activity of cambium causes light and dark bands of tissue-early and late wood respectively.	Annular ring are not prominent in trees of temperate region.

30	The correct sequence of phases of cell cycle is:	S→G1→G2→M	G1→S→G2→M	M→G1→G2→S	G1→G2→S→M
31	Purines found both in DNA and RNA are:	Guanine and cytosine	Cytosine and thymine	Adenine and thymine	Adenine and guanine
32	The RBC deficiency is caused by deficiency of:	Vitamin B2	Vitamin B12	Vitamin B6	Vitamin B1
33	Which of these following methods is the most suitable for disposal of nuclear waste?	Dump the waste within rocks under Deep Ocean	Bury the waste within rocks deep below the Earth's surface	Shoot the waste into space	Bury the waste under Antarctic ice-cover
34	What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia, and is sterile?	Edward syndrome	Down's syndrome	Turner's syndrome	Klinefelter's syndrome
35	Which of the following is the most important cause for animals and plants being driven to extinction?	Economic exploitation	Alien species invasion	Drought and floods	Habitat loss and fragmentation
36	When gene targeting involving gene amplification is attempted in an individual's tissue to treat disease, it is known as:	Gene therapy	Biopiracy	Safety testing	Molecular diagnosis
37	When the centromere is situated in the middle of two equal arms of chromosomes, the chromosome is referred as:	Acrocentric	Metacentric	Telocentric	Sub-metacentric
38	The factor that leads to bottleneck effect in a population is	Genetic drift	Natural selection	Genetic recombination	Mutation
39	Which of the following is a correct sequence of steps in a PCR (Polymerase Chain Reaction)?	Annealing, Denaturation, Extension	Denaturation, Extension, Annealing	Denaturation, Annealing, Extension	Extension, Denaturation, Annealing

40	Which one of the following statements regarding post-fertilization development in flowering plants is incorrect?	Zygote develops into embryo	Ovules develop into embryo sac	Ovary develops into fruit	Central cell develop into endosperm
41	Complete the flow chart on central dogma. : DND (a) > DNA (b) > RNA (c) > Protein	a) Transduction; (b) Translation; (c) Replication	(a) Replication; (b) Transcription; (c) Transduction	(a) Replication; (b) Transcription; (c) Translation	(a) Translation; (b) Transcription; (c) Transduction
42	Mutations in plant cells can be induced by :	Zeatin	Kinetin	Infrared rays	Gamma rays
43	Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called :	Maturity	Elasticity	Flexibility	Plasticity
44	DNA fingerprinting involves identifying differences in some specific regions in DNA sequence, called as :	Satellite DNA	Repetitive DNA	Polymorphic DNA	Single nucleotides
45	Dobson units are used to measure thickness of :	Ozone	CFCs	Stratosphere	Troposphere
46	Which is the “Only enzyme” that has “Capability to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes?”	DNase	DNA dependent DNA polymerase	DNA dependent RNA polymerase	DNA Ligase
47	Which of the following RNAs is not required for the synthesis of protein?	siRNA	mRNA	tRNA	rRNA

48	Persons with 'AB' blood group are called as "Universal recipients". This is due to :	Absence of antibodies, anti-A and anti-B, in plasma.	Absence of antigens A and B on the surface of RBCs.	Absence of antigens A and B in plasma.	Presence of antibodies, anti-A and anti-B, on RBCs.
49	If Adenine makes 30% of the DNA molecule, what will be the percentage of Thymine, Guanine and Cytosine in it?	T : 20 ; G : 25 ; C : 25	T : 20 ; G : 30 ; C : 20	T : 20 ; G : 20 ; C : 30	T : 30 ; G : 20 ; C : 20
50	The centriole undergoes duplication during	G2 phase	S-phase	Prophase	Metaphase
51	The site of perception of light in plants during photoperiodism is :	Leaf	Shoot apex	Stem	Axillary bud
52	The power house of cell is :	Ribosome	Lysosome	Nucleus	Mitochondria
53	Which of the following is not an application of PCR (Polymerase Chain Reaction)?	Detection of gene mutation	Molecular diagnosis	Gene amplification	Purification of isolated protein
54	Amensalism can be represented as :	Species A (+) ; Species B (0)	Species A (-) ; Species B (0)	Species A (+) ; Species B (+)	Species A (-) ; Species B (+)
55	Which of the following is not correct about carbon monoxide?	The carboxy-haemoglobin (haemoglobin bound to CO) is less stable than ox-haemoglobin.	It is produced due to incomplete combustion.	It forms carboxyhaemoglobin) It reduces oxygen carrying ability of blood.
56	Which of the following is a basic amino acid?	Tyrosine	Lysine	Serine	Alanine
57	Presence of which of the following conditions in urine are indicative of Diabetes Mellitus?	Ketonuria and Glycosuria	Renal calculi and Hyperglycaemia	Uremia and Ketonuria	Uremia and Renal Calculi
58	Which of the following is put into anaerobic sludge digester for further sewage treatment?	Effluents of primary treatment	Activated sludge	Primary sludge	Floating debris

59	Enzyme that facilitates the joining of DNA strands is :	DNA polymerase	DNA gyrase	DNA ligase	DNA helicase
60	From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask.	CH ₄ , H ₂ , NH ₃ and water vapor at 600°C	CH ₃ , H ₂ , NH ₃ and water vapor at 700°C	CH ₄ , H ₂ , NH ₃ and water vapor at 800°C	CH ₃ , H ₂ , NH ₄ and water vapor at 900°C
61	An organic compound contains 78% (by wt.) carbon and remaining percentage of hydrogen. The right option for the empirical formula of this compound is :	CH	CH ₂	CH ₃	CH ₄
62	Acid strength increases in the order:	HI < HBr < HCl < HF	HF < HCl < HBr < HI	HBr < HI < HF < HCl	HCl < HF < HI < HBr
63	The compound which shows metamerism is-	C ₄ H ₁₀ O	C ₅ H ₁₂	C ₃ H ₈ O	C ₃ H ₆ O
64	From the following pairs of ions which one is not an iso - electronic pair?	Fe ²⁺ , Mn ²⁺	O ²⁻ , F ⁻	Na ⁺ , Mg ²⁺	Mn ²⁺ , Fe ³⁺
65	The number of protons, neutrons and electrons in ¹⁷⁵ Lu ₇₁ , respectively, are	104, 71 and 71	175, 104 and 71	71, 71 and 104	71, 104 and 71
66	Which of the following set of molecules will have zero dipole moment?	Ammonia	Water	Carbon dioxide	Hydrogen fluoride
67	The correct option for free expansion of an ideal gas under adiabatic condition is	q < 0; T = 0 and w = 0	q > 0; T > 0 and w > 0	q = 0; T = 0 and w = 0	q = 0; T < 0 and w < 0
68	Which one of the followings has maximum number of atoms?	1 g of O ₂ (g) [Atomic mass of O = 16]	1 g of Li(s) [Atomic mass of Li = 7]	1 g of Ag(s) [Atomic mass of Ag = 108]	1 g of Mg(s) [Atomic mass of Mg = 24]
69	For the reaction, 2Cl(g) → Cl ₂ (g), the correct option is :	Δr H < 0 and Δr S > 0	Δr H < 0 and Δr S < 0	Δr H > 0 and Δr S > 0	Δr H > 0 and Δr S < 0

70	Paper chromatography is an example of	Thin layer chromatography	Column chromatography	Adsorption chromatography	Partition chromatography
71	Sucrose on hydrolysis gives	α -D-Glucose + β -D-Fructose	α -D-Fructose + β -D-Fructose	β -D-Glucose + α -D-Fructose	α -D-Glucose + β -D-Glucose
72	The liquified gas that is used in dry cleaning along with a suitable detergent is :	CO ₂	Water vapour	Petroleum gas	NO ₂
73	The oxidation state of Cr in CrO ₆ is :	4	6	8	12
74	Which of the following is paramagnetic?	H ₂	N ₂	O ₂	Li ₂
75	"Ramachandran plot" is used to confirm the structure of	DNA	RNA	Proteins	Triacylglycerides
76	Which molecule has the largest dipole moment?	HCl	CCl ₄	H ₂ S	CO ₂
77	Which of the following compounds have the highest boiling point?	H ₂ S	CH ₄	NH ₃	PH ₃
78	Compound in which carbons use only sp ³ hybridization is	CH ₃ CH ₂ CH ₃	CH ₃ CH=CH ₂	CH ₃ C≡CH	CH ₂ =CHCH=CH ₂
79	It is possible to distinguish between optical isomers by	Infrared spectroscopy	Mass spectrometry	Melting point determination	Polarimetry
80	A mixture of N ₂ and Ar gases in a cylinder contains 7 g of N ₂ and 8 g of Ar. If the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N ₂ is : [Atomic masses (in g mol ⁻¹): N = 14, Ar = 40]	15 bar	18 bar	9 bar	12 bar

81	A particular radio station broadcasts on a frequency of 1,368 kHz. The wavelength of the electromagnetic radiation emitted by the transmitter is: [speed of light, $c = 3.0 \times 10^8 \text{ ms}^{-1}$]	21.92 cm	219.3 m	219.2 km	2192 m
82	A spherical conductor of radius 10 cm has a charge of $3.2 \times 10^{-7} \text{ C}$ distributed uniformly. What is the magnitude of electric field at a point 15 cm from the centre of the sphere? $\pi \epsilon_0 = 9 \times 10^9 \text{ Nm}^2/\text{C}^2$	$1.28 \times 10^5 \text{ N/C}$	$2.52 \times 10^4 \text{ N/C}$	$5.74 \times 10^6 \text{ N/C}$	$9.81 \times 10^7 \text{ N/C}$
83	Dimensions of stress are:	$[\text{ML}^0\text{T}^{-2}]$	$[\text{ML}^{-1}\text{T}^{-2}]$	$[\text{MLT}^{-2}]$	$[\text{ML}^2\text{T}^{-2}]$
84	Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over a pulley which is frictionless. The acceleration of the system in terms of acceleration due to gravity (g) is :	$g/5$	$g/10$	g	$g/2$
85	In a certain region of space with volume 0.2 m^3 , the electric potential is found to be 5 V throughout. The magnitude of electric field in this region is :	1 N/C	5 N/C	zero	0.5 N/C

86	When a uranium isotope $^{235}\text{U}_{92}$ is bombarded with a neutron, it generates $^{89}\text{Kr}_{36}$, three neutrons and :	$^{101}\text{Kr}_{36}$	$^{103}\text{Kr}_{36}$	$^{144}\text{Ba}_{56}$	$^{91}\text{Zr}_{40}$
87	A cylinder contains hydrogen gas at pressure of 249 kPa and temperature 27°C . Its density is : (R = $8.3 \text{ J mol}^{-1} \text{ K}^{-1}$)	0.1 kg/m ³	0.02 kg/m ³	0.5 kg/m ³	0.2 kg/m ³
88	The solids which have the negative temperature coefficient of resistance are:	Insulators	Semiconductors	Insulators and semiconductors	Metals
89	A body weighs 72 N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth?	30 N	24 N	48 N	32 N
90	The phase difference between displacement and acceleration of a particle in a simple harmonic motion is :	$\pi / 2 \text{ rad}$	zero	$\pi \text{ rad}$	$3\pi / 2 \text{ rad}$
91	Light of frequency 1.5 times the threshold frequency is incident on a photosensitive material. What will be the photoelectric current if the frequency is halved and intensity is doubled?	one-fourth	zero	doubled	four times

92	In Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent sources is doubled, then the fringe width becomes :	Four times	One-fourth	Double	Half
93	Polar molecules are the molecules:	having a permanent electric dipole moment.	having zero dipole moment	acquire a dipole moment only in the presence of electric field due to displacement of charges.	acquire a dipole moment only when magnetic field is absent.
94	The escape velocity from the Earth's Surface is v . The escape velocity from the surface of another planet having a radius, four times that of Earth and same mass density is:	$4v$	v	$2v$	$3v$
95	A parallel plate capacitor has a uniform electric field	$E^2 Ad/\epsilon_0$	$1/2 \epsilon_0 E^2$	$\epsilon_0 Ead$	$1/2 \epsilon_0 E^2 Ad$
96	A person standing on the floor of an elevator drops a coin. The coin reaches the floor in time t_1 if the elevator is at rest and in time t_2 if the elevator is moving uniformly. Then	$t_1 = t_2$	$t_1 > t_2$	$t_1 < t_2$	$t_1 > t_2$ or $t_1 < t_2$, depends upon whether the lift is going up or down
97	For a transparent medium, relative permeability and permittivity, μ_r and ϵ_r are 1.0 and 1.44 respectively. The velocity of light in this medium would be,	1×10^8 m/s	2.5×10^8 m/s	5×10^8 m/s	10×10^8 m/s

98	The equivalent capacitance of the combination shown in the figure is:	$3C/2$	$3C$	$2C$	$C/2$
99	A body is executing simple harmonic motion with frequency 'n', the frequency of its potential energy is:	$4n$.	n	$2n$	$3n$
100	Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass. The centre of mass of the system from the 5 kg particle is nearly at a distance of :	67 cm	80 cm	33 cm	50 cm