

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY
THIRUVANANTHAPURAM – 695 011, KERALA ,INDIA

Biomaterials
Entrance Exam January 2024

Sl No.	Question	Option 1	Option 2	Option 3	Option 4	Correct Option
1	Which of the following electrode works by ion exchange mechanism?	Glass electrode	Enzyme electrode	Calomel electrode	K ⁺ sensing electrode	1
2	Name the polymer that is used in the manufacture of paints and lacquers.	Polypropene	Polyvinyl chloride	Glyptal	Bakelite	3
3	The entropy change when transferring 100kJ heat to a large mass of water at 0°C is -----	268 J/K	113 J/K	210 J/K	366 J/K	4
4	The work done when 50g of iron reacts with HCl in a closed vessel of fixed volume is -----	6kJ	0.5 kJ	0	-2.2 kJ	3
5	Select the most intense line among the following.	Pre-resonance Raman line	Raman Stokes line	Raleigh line	Raman anti-stokes line	3
6	Reactions in which the reactants react in more than one way yielding different sets of products is known as -----	Consecutive reactions	Parallel reactions	Chain reactions	Complex reactions	2
7	Select the correct order of acidic strength from the following.	HF>NH ₃ >CH ₄ >H ₂ O	HF>H ₂ O>CH ₄ >NH ₃	HF>H ₂ O>NH ₃ >CH ₄	HF>CH ₄ >H ₂ O>NH ₃	3
8	Which among the following is Raman inactive?	H ₂ O symmetric stretch	H ₂ O bending	CO ₂ bending	CO ₂ symmetric stretch	3
9	Microwave spectra of a molecule has three rotational constants. The molecule is -----	Spherical top	Asymmetric	Oblate	Prolate	2
10	The total fundamental modes of vibrations for NH ₃ is 6. Out of these how many bending modes of vibrations are there?	2	4	3	1	3
11	The area under the stress - strain curve gives the measure of _____	Toughness	Brittleness	Ablation	Modulus	1
12	The mode of sterilization of PVC blood bags is _____	ETO sterilization	Autoclaving	Sterilization by radiation	Dry heat sterilization	1

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	An organic compound X is oxidized by using acidified $K_2Cr_2O_7$. The product obtained reacts with phenyl hydrazine but reacts negatively to silver mirror test.	$(CH_3)_2CHOH$	CH_3CHO	CH_3CH_2OH	CH_3COCH_3	1
13	What could be the possible structure of X?					
	Which of the following is correct for the resultant polymer product formed, when molecules of phthalic acid react with molecules of glycerol?	cross-link polymer	linear polymer	branch polymer	none of the mentioned	1
14	Which of the following is the most widely used polymerization technique to produce polyvinyl acetate?	emulsion polymerization	suspension polymerization	solution polymerization	all of the mentioned	1
15	Which of the following polymers contains –C–C– linkages only?	condensation polymers	copolymers	addition polymers	none of the mentioned	3
16	Nylon-6 is made from	Butadiene	Chloroprene	Adipic acid	Caprolactum	4
17	Cellulose acetate is a	Semisynthetic polymer	Natural polymer	Synthetic polymer	Plasticiser	1
18	Which of the following is an example of condensation polymers?	Terylene	Orlon	PVC	Polythene	1
19	Buna-S is a polymer of	Butadiene	Butadiene and styrene	Styrene	Butadiene and chloroprene	2
20	Which one among the following is a thermosetting plastic?	Bakelite	Perspex	PVA	PVC	1
21	Photosynthesis is most active in	Sunlight	Yellow light	Red light	Green light	1
22	The process in which water is split during photosynthesis is	Photolysis	Plasmolysis	Hydrolysis	Hemolysis	1
23	If pressure of a gas increases, it's Kinetic Energy will	Increase	Decrease	Remain constant	Be double	1
24	Which of the elements listed below occurs in Allotropic forms ?	Iodine	Copper	Sulphur	Silver	3
25	Which one of the following is most basic ?	F	Cl	Br	I	4
26	Sodium is kept under	Absolute alcohol	Petrol	Kerosene	Water	3

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28	Azeotropic mixtures are	Boiling at different temperature	Mixture of solids	Constant boiling mixtures	None of the above	3
29	An aldehyde on oxidation gives	An alcohol	An acid	A ketone	An ether	2
30	Which of the following compounds does not contain an -OH group ?	Alcohol	Phenol	Aldehyde	Carboxylic acid	3
31	Vegetable oils are	Essential oils obtained from plants	Unsaturated fatty acids	Glycerides of saturated fatty acids	Glycerides of unsaturated fatty acids	4
32	Which acid is present in vinegar ?	Hydrochloric Acid	Acetic Acid	Tartaric Acid	Citric Acid	2
33	Which makes a Lemon sour ?	Tartaric Acid	Oxalic Acid	Citric Acid	Hydrochloric Acid	3
34	National mammal of India is	Cow	Peacock	Lion	Tiger	4
35	National Bird of India is	Pigeon	Peacock	Tiger	Swan	2
36	Protein synthesis is associated with	Ribosome	Cell membrane	Nucleus	Chromatin	1
37	The plasma membrane of an animal cell is composed of	Glycoproteins	Phospholipoproteins	Phosphoproteins	Lipoproteins	2
38	Synthesis of Vitamin-A in the body takes place in	Blood	Spleen	Pancreas	Liver	4
39	The Liver stores in the form of	Glucose	Glycogen	Albumen	ATP	2
40	Saliva converts	Proteins into Amino acids	Glycogen into Glucose	Starch into Maltose	Fat into vitamins	3
41	Most of the plant names are derived from	Latin	German	English	Sanskrit	1
42	At Boiling Temperature an Enzyme is	Inactivated	Denatured	Killed	Unaffected	2
43	Enzymes are basically	Proteins	Vitamins	Fat	Carbohydrates	1
44	Thermo-regulating centre of the body is	Pituitary	Hypothalamus	Cerebellum	Spinal Cord	2
45	Wisdom teeth in man is	1st Molar	Last Molar	1st premolar	Last incisor	2
46	How many teeth growth twice in life of man	12	20	28	32	1
47	The main difference between procaryotic and eucaryotic cells is that in procaryotic cell, there is no	Internal membrane system	Cell wall	Genetic system	Nucleus with a nuclear membrane	4

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48	Agar-agar is obtained from	Fungi	Algae	Ginosperms	Virus	2
49	During rainy season the ground becomes slippery due to dense growth of	Algae	Fungi	Bacteria	Virus	1
	Nitrifying bacteria -	Convert ammonia or ammonium compounds into nitrates	Convert nitrate into nitrogen	Convert nitrogen to nitrate	Convert carbon dioxide into carbohydrates	1
50						
51	The disease caused by bacteria is	Amoebic dysentery	Arthritis	Beri-beri	Diphtheria	4
52	Virus multiplies	Inside living cell	In air	In water	In all media	1
53	Epsom salt is hydrate of	Magnesium Sulphate	Calcium Sulphate	Sodium Chloride	Potassium Chloride	1
54	Mercury is transported in metal containers made of	Iron	Silver	Lead	Aluminum	1
55	When a charge is given to soap bubble it	Increases it's size	Collapses	Remains the same	Decreases in size	1
		Allows current flow in one direction but not in the opposite direction	Has conductivity greater than insulator	Allows one type of carrier alone to pass through it	Has conductivity less than insulator	2
56	A semiconductor is a material which					
	Velocity of sound is	Directly proportional to absolute temperature	Directly proportional to square root of absolute temperature	Inversely proportional to absolute temperature	Inversely proportional to room temperature	2
57					Waves of electric and magnetic fields	
58	Sound waves in a gas are always	Transverse	Longitudinal	Stationary		2
59	In a pressure cooker the cooking is fast because	The boiling point of water is raised by the increased	The boiling point of water is lowered by pressure	Most steam is available to cook the food at 100°C	More pressure is available to cook food at 100oC	1

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		pressure inside the cooker				
	Coefficient of thermal conductivity depends upon	Temperature difference between the two sides	Thickness of the metal plate	Area of the plate	All of the above factors	4
60	One-tenth of one bag of potatoes weighs the same as one-seventh of one bag of small pebbles. What is the ratio of the weight of 2 bags of potatoes to 3 bags of pebbles?	7:15	20:21	21:20	3:2	2
61	A and B started a business by investing Rs. 36,000 and Rs. 63,000. Find the share of each, out of the annual profit of Rs. 5500.	Rs. 2000, Rs. 3500	Rs. 2500, Rs. 3500	Rs. 3500, Rs. 2500	None of these	1
62	A sum of Rs. 13,950 should be divided among three persons A, B and C. B must get the double of A's share and C must get Rs. 50 less than the double of B's share. The share of A will be _____.	Rs. 1950	Rs. 1981.25	Rs. 2000	Rs. 2007.75	3
63	GENEALOGY: ANCESTRY,	WORDS	INSECTS	FOSSILS	INSCRIPTIONS	2
64	ENTOMOLOGY: _____					
	If 'a' is the smallest prime number greater than 39 and 'b' is the largest prime number less than 10, then ab = _____.	299	287	229	261	2
65	Find the odd number from the series 8, 64, 99, 216, 343, 729, 1728	64	216	729	99	4
66	A person has the capability of thinking 100 lines of code in five minutes and can type 100 lines of code in 10 minutes. He takes a break for five minutes after every ten minutes. How many lines of codes will he complete typing after an hour?	100	250	350	600	2
67						

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68	Which number comes next in this sequence? 1, 1.5, 2.5, 4, ___?	9	8	7	6	4
69	If 3 less than twice a certain number is equal to 2 more than 3 times the number, then 5 less than 5 times the number is _____.	-30	-20	-5	0	1
70	Complete the equation by correctly identifying the incomplete number of the calculation from the list of options given below.- Equation: $(4.25 + 2.75)^2 + \underline{\hspace{1cm}} = 53 - (9 \times 8)$	2	4	6	8	2
71	A pescatarian is someone who eats _____.	Egg	Chicken	Fish	None of the above	3
72	Chandrayaan-3 was launched from _____.	Satish Dhawan Space Centre	VSSC Thumba	Abdul Kalam Island Odisha	Kennedy Space Centre Cape Canaveral	1
73	In doing action research what is the usual sequence of steps?	Reflect, Observe, Plan, Act	Plan, Act, Observe, Reflect	Plan, Reflect, Observe, Act	Act, Observe, Plan, Reflect	2
74	When you reverse the age of the father you will get the age of the son. One year ago the age of the father was twice that of son's age. What are the current ages of son and father?	37 and 73	24 and 42	13 and 31	15 and 51	1
75	The perimeters of a circle, a square and an equilateral triangle are equal. Which one of the following statements is true?	The circle has the largest area.	The square has the largest area.	The equilateral triangle has the largest area.	All the three shapes have the same area.	1
76	The radius as well as the height of a circular cone increases by 10%. The percentage increase in its volume is _____.	17.1	21.0	33.1	72.8	3
77	If the average of 5 numbers is 36 and the average of four of those numbers is 34, then what is the value of the fifth number?	2	34	35	44	4

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78	A, B and C are intelligent; A, D and E are laborious; D, C and E are honest; and A, B and E are ambitious. Who is neither laborious nor honest?	A and D	B	E	C	2
79	Although it does contain some pioneering ideas, one would hardly characterize the work as _____.	Orthodox	Conventional	Original	Trifling	3
80	A car got 33 Km per liter using petrol that cost Rs. 89.5 per liter. Approximately what was the cost, in Rupees of the petrol used in driving the car 350 Km?	1000	880	950	1100	3
81	A certain jar contains 60 jelly beans — 22 white, 18 green, 11 yellow, 5 red, and 4 purple. If a jelly bean is to be chosen at random, what is the probability that the jelly bean will be neither red nor purple?	0.09	0.15	0.85	0.91	3
82	Which pair of words among the following are odd ones Crime and Punishment, Exercise and Health, Judgement and Advocacy, Hardwork and Success, Slowth and Failure?	Slowth and Failure	Hardwork and Success	Judgement and Advocacy	Exercise and Health	3
83	What is the greatest value of x for which $(3x - 2)(x + 1) = 0$?	-1	2/3	-2/3	1	2
84	Which of the following numbers is farthest from the number 1 on the number line?	0	5	-10	10	3
85	Select the lettered pair that best expresses a relationship similar to that expressed in the original pair Antidote : Poison	Cure : Recovery	Tonic : Lethargy	Narcotic : Sleep	Stimulant : Relapse	2
86	Choose word or phrase that is most nearly opposite in meaning to the word ENERVATE	Recuperate	Resurrect	Strengthen	Gather	3
87	The sum of three numbers is 98. If the ratio of the first to second is 2:3 and that of the second to the third is 5:8, then the second number is?	20	30	40	58	2
88	Distance between two stations, X and Y is 778 km. A train covers the journey from X to Y at 84 Km per	67 Km/hr	67.2 Km/hr	69 Km/hr	69.2 Km/hr	2

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	hour and returns back to X with a uniform speed of 56 Km per hour. Find the average speed of the train during the whole journey?					
	Due to an increase in taxes on electronic devices, the price of a cooler has increased to Rs. 8450, which is 30% increase of the original price. What was the original price of the cooler prior to the increase?	5154.5	5915	6500	6760	3
89	If one-third of one-fourth of a number is 15, then three-tenth of that number is	25	35	45	54	4
90	Three times the first of three consecutive odd integers is 3 more than twice the third. The third integer is ____.	15	13	11	9	1
91	The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 36. What is the difference between the two digits of that number?	3	4	9	Cannot be determined	2
92	Which is the odd word?	Inch	Yard	Ounce	Centimeter	3
93	Two ships are sailing in the sea on the two sides of a lighthouse. The angle of elevation of the top of the lighthouse is observed from the ships are 30° and 45° respectively. If the lighthouse is 100 m high, the distance between the two ships is ____m.	173	200	273	300	3
94	The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is ____m.	2.3	4.6	7.8	9.2	4
95	From a point P on a level ground, the angle of elevation of the top tower is 30°. If the tower is 100 m high, the distance of point P from the foot of the tower is ____m.	149	156	173	200	3
96						

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97	Choose the word which best expresses the meaning of the word CORPULENT	Lean	Emaciated	Obese	Gaunt	3
98	In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is _____.	75 cu. m	750 cu. m	7500 cu. m	75000 cu. m	2
99	A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume of the hall is _____m ³	720	900	1200	1800	3
100	A and B invest in a business in the ratio 3: 2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is Rs._____.	1425	1500	1537.5	1576	2