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SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION - ACADEMIC SESSION AUGUST 2019

PROGRAMME: MPhil Biomedical Technology-BIOLOGY

Time:60 Minutes

Max. Marks: 60

(Select the most appropriate answer)
(There are no negative marks for wrong answers)

Sl. No	Questions	Answer
1	Human Papilloma Virus is the causative organism for ----- a) Prostate Cancer b) Cervical Cancer c) Lymphatic Filariasis d) Leukemia H	
2	Which of the following artificial sweeteners is not broken down by the body and therefore it is non-caloric (no-calorie sweetener) : a) Aspartame b) Cyclamate c) Sucralose d) All of the above	
3	Which among the following is not correctly matched? a) Malleus – Middle Ear Bone b) Maxilla – Cranial Bone c) Lunate Carpal Bone d) All are correct	

4	<p>Who developed polio vaccine?</p> <ul style="list-style-type: none"> a) Jonas Salk b) David Bodian c) Almroth Wright d) Albert Sabin 	
5	<p>Percentage of plasma in human blood?</p> <ul style="list-style-type: none"> a) 35% b) 45% c) 50% d) 55% 	
6	<p>Fraternal Twins are a result of ?</p> <ul style="list-style-type: none"> a) a single egg is fertilized to form one zygote which then divides into two separate embryos b) sperm cells fertilize both the ovum and the second polar body c) two eggs independently fertilized by two different sperm cells d) none of The above 	
7	<p>The total number of cells in a culture is counted using the trypan blue exclusion assay and is found to be 3×10^6 cells/ml. The culture is diluted 1:30 and then 100μl seeded per well into a 96 well plate. What is the final cell density per well?</p> <ul style="list-style-type: none"> a) 1×10^5 b) 3×10^4 c) 2.7×10^5 d) 1×10^4 	
8	<p>Who is known for developing DNA fingerprinting and profiling techniques -</p> <ul style="list-style-type: none"> a) Vernon Heywood b) Patrick Laidlaw c) Alec Jeffreys d) Heinz Wolff 	
9	<p>Heart that generatea cardiac contraction independent of nervous input is known as:</p> <ul style="list-style-type: none"> a) Neurogenic heart b) Myogenic heart c) Pulsating heart 	

	d) Ampullary heart	
10	. The energy released by 1 gram of glucose is a) 6.8 kCal b) 4.1 kCal c) 5.7 kCal d) 7.3 kCal	
11	Total salt content in blood (percent by weight) a) 1.85 to 1.9 b) 11.85 to 11.9 c) 2.85 to 2.9 d) 0.85 to 0.9	
12	Nucleic acid synthesis requires this vitamin: a) Tocoferol b) Folic acid c) Cyanocobalamine d) Riboflavin	
13	17. Estrous cycle is absent in _____? a) Rabbit b) Horse c) Cow d) Primates	
14	Largest phylum with respect to number of species: a) Annelida b) Platyhelminthes c) Chordata d) Arthropoda	
15	The kilo calories of energy released from one gram of fat is a) 7.50 b) 4.59 c) 9.00 d) 8.00	
16	Nobel Prize 2018 for Medicine was awarded to James given? a) Development of in vitro fertilization b) Discovery of Diabetes related genes c) Discovery of cancer therapy by inhibition of negative immune	

	<p>regulation</p> <p>d) Work on Next generation sequencing</p>	
17	<p>Nucleus of cell was discovered in 1831 by:</p> <p>a) Robert Hooke</p> <p>b) Robert Brown</p> <p>c) Rudolf Virchow</p> <p>d) Theodore Schwann</p>	
18	<p>Placenta is composed of</p> <p>a) the union of foetal and uterine tissue</p> <p>b) foetus only</p> <p>c) fusion of germ layers</p> <p>d) None of these</p>	
19	<p>Prothrombin which helps in clotting of blood is released by</p> <p>a) lymphocytes</p> <p>b) erythrocytes</p> <p>c) monocytes</p> <p>d) blood platelets</p>	
20	<p>Poison glands of snakes are homologous to</p> <p>a) electric organs of fishes</p> <p>b) stings of rays</p> <p>c) sebaceous glands of mammals</p> <p>d) salivary glands of vertebrates</p>	
21	<p>Most abundant tissue in our body is</p> <p>a) muscular</p> <p>b) connective</p> <p>c) epithelial</p> <p>d) nervous</p>	
22	<p>----- is antigen – antibody crosslinking</p> <p>a) agglutination</p> <p>b) complement fixation</p>	

	<ul style="list-style-type: none"> c) a cross reaction d) all of these 	
23	<p>Affinity chromatography deals with the</p> <ul style="list-style-type: none"> a) specific binding of a protein constituents for another molecule b) protein - protein interaction c) protein - carbohydrate interaction d) none of the above 	
24	<p>Maturation of human B cells and T cells occur in :</p> <ul style="list-style-type: none"> a) bone marrow and thymus respectively b) lymph nodes and spleen respectively c) bursa and thymus respectively d) none of these 	
25	<p>Which of the following is a mosaic antigen?</p> <ul style="list-style-type: none"> a) virus b) bacteria c) a hapten d) protein 	
26	<p>Retroviruses are used as vectors in animal cells as :</p> <ul style="list-style-type: none"> a) they cover a wide host range b) infection does not lead to cell death, infected cells produce virus over an indefinite period c) viral gene expression is driven by strong promoters d) all of the above 	
27	<p>Histone absent in SV40 virus?</p> <ul style="list-style-type: none"> a) H1 b) H2A c) H3 d) H4 	
28	<p>Moloney-Mu-leukemia virus is:</p> <ul style="list-style-type: none"> a) Vaccinia virus 	

	<ul style="list-style-type: none"> b) Baculo virus c) Retro virus d) none of these 	
29	<p>The average life span of circulating platelets is</p> <ul style="list-style-type: none"> a) 8 to 9 days b) 1-2 days c) 120-130 days d) 100-120 days 	
30	<p>Which organ synthesizes Albumin in human body?</p> <ul style="list-style-type: none"> a) liver b) kidney c) bone marrow d) blood 	
31	<p>260/280 ratio of a nucleic acid is 2 if sample contains:</p> <ul style="list-style-type: none"> a) Pure DNA b) Pure RNA c) Both A and B d) Pure Proteins 	
32	<p>If duplex DNA is PCR amplified for four cycles it will give rise to :</p> <ul style="list-style-type: none"> a) 16 single strands of DNA b) 16 double stranded DNA c) 18 single strands of DNA d) 18 double stranded DNA 	
33	<p>Acetylcholine receptor is an archetype for:</p> <ul style="list-style-type: none"> a) Ligand gated ion channel b) ATPase dependent voltage gated ion channel c) ATPase dependent calcium gated ion channel d) ATPase independent voltage gated ion channel 	
34	<p>During DNA replication, events at the replication fork require different types of enzymes having specialized functions except</p>	

	<ul style="list-style-type: none"> a) DNA polymerase III b) DNA gyrase c) DNA ligase d) DNA glycosylase 	
35	<p>The movement of a single cell was required to be continually monitored during development. This cell was marked with a reporter gene. To visualize this one would use</p> <ul style="list-style-type: none"> a) Phase contrast microscopy b) Bright field microscopy c) Fluorescence microscopy d) Atomic force microscopy 	
36	<p>Which pump is responsible for initiating muscle contraction through depolarization of muscle membrane?</p> <ul style="list-style-type: none"> a) Na⁺ pump b) K⁺ pump c) Ca²⁺ pump d) Mg²⁺ pump 	
37	<p>Molarity is defined as</p> <ul style="list-style-type: none"> a) Number of moles of solute/L of solvent b) Grams of solute/L of solvent c) Number of moles of solute/Kg of solvent d) Number of grams equivalent of solute/L of solvent 	
38	<p>In which of the following tissues insulin enhances transport of glucose</p> <ul style="list-style-type: none"> a) Brain b) Lungs 	

	<p>c) Red blood cells</p> <p>d) Adipose tissue</p>	
39	<p>Western blot is a technique used for :</p> <p>a) DNA expression</p> <p>b) Protein expression</p> <p>c) RNA expression</p> <p>d) Fat expression</p>	
40	<p>BCG immunization is for :</p> <p>a) Measles</p> <p>b) Tuberculosis</p> <p>c) Diptheria</p> <p>d) Typhoid</p>	
41	<p>Cell or tissue death within a living body is called as:</p> <p>a) Neutrophilia</p> <p>b) Nephrosis</p> <p>c) Necrosis</p> <p>d) Neoplasia</p>	
42	<p>Members of the antibody protein family that have common structural features are collectively known as</p> <p>a) Haptens</p> <p>b) Allergens</p> <p>c) Antigens</p> <p>d) Immunoglobulins</p>	

43	<p>Molecular chaperones are class of proteins that facilitate</p> <ul style="list-style-type: none"> a) The proper folding of newly synthesized proteins b) Unfolding of newly synthesized proteins c) Degradation of newly synthesized proteins d) Targeting of newly synthesized proteins 	
44	<p>In ABO blood group system, antigenic determinants are</p> <ul style="list-style-type: none"> a) Nucleic acid b) Carbohydrate c) Lipid d) Protein 	
45	<p>Protein separation techniques are often based on the properties EXCEPT,</p> <ul style="list-style-type: none"> a) Solubility of the protein b) Viscosity of the protein c) Charge of protein d) Specific binding affinity of protein 	
46	<p>A peptide bond is</p> <ul style="list-style-type: none"> a. Planar in nature b. Rigid with partial double bond character c. Covalent d. All of the above 	
47	<p>When glycine receptors are activated in central nervous system chloride ions enter in neurons causing _____</p> <ul style="list-style-type: none"> a) An inhibitory post synaptic potential b) An excitatory post synaptic potential c) Both a and b 	

	d) Hyper excitability	
48	Most abundant RNA in a cell is a. mRNA b. rRNA c. tRNA d. miRNA	
49	2. If a solution has to be a buffer, its pH should be , a. At its K_a value b. At its pK_a value c. Near to 7 d. Near to 1×10^{-14} M	
50	Tendon Connects: a) Muscle to bone b) Muscle to muscle c) Ligament to bone d) Bone to bone	
51	In a certain code, '256' means 'red colour chalk', '589' means 'green colour flower' and '254' means 'white colour chalk'. The digit in the code that indicates white' is, a. 2 b. 4 c. 5 d. 8	
52	In a school, there are five teachers A, B, C, D and E. A and B teach Hindi and English. C and B teach English and Geography. D and A teach Mathematics and Hindi. E and B teach History and French. Who teaches	

	<p>maximum number of subjects?</p> <p>a. A</p> <p>b. B</p> <p>c. D</p> <p>d. E</p>	
53	<p>What is the total number of digits printed, if a book containing 150 pages is to be numbered from 1 to 150?</p> <p>a. 262</p> <p>b. 450</p> <p>c. 360</p> <p>d. 342</p>	
54	<p>There is a milk sample with 50% water in it. If $\frac{1}{3}$rd of this milk is added to equal amount of pure milk, then water in the new mixture will fall down to:</p> <p>a. 25%</p> <p>b. 30%</p> <p>c. 35%</p> <p>d. 40%</p>	
55	<p>. If second and fourth Saturdays and all the Sundays are taken as only holidays for an office, what would be the minimum number of possible working days of any month of any year?</p> <p>a. 23</p> <p>b. 22</p> <p>c. 21</p> <p>d. 20</p>	

56	<p>Four tests—Physics, Chemistry, Mathematics and Biology are to be conducted on four consecutive days, not necessarily in the same order. The Physics test is held before the test which is conducted after Biology. Chemistry is conducted exactly after two tests are held. Which is the last test held?</p> <p>a. Physics b. Biology c. Mathematics d. Chemistry</p>	
57	<p>A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:</p> <p>a) 145° b) 150° c) 156° d) 160°</p>	
58	<p>A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?</p> <p>a) 120 metres b) 180 metres c) 324 metres d) 150 metres</p>	
59	<p>What will be the maximum sum of 44, 42, 40, ?</p> <p>a) 502 b) 504 c) 506 d) 500</p>	
60	<p>Consider the following logical inferences.</p> <p>LI-1: If it rains then the cricket match will not be played. The cricket match was played. Inference: There was no rain.</p> <p>LI-2: If it rains then the cricket match will not be played. It did not rain. Inference: The cricket match was played.</p>	

	Which of the following is TRUE?	
	(A) Both LI-1 and LI-2 are correct inferences (B) LI-1 is correct but LI-2 is not a correct inference (C) LI-1 is not correct but LI-2 is a correct inference (D) Both LI-1 and LI-2 are not correct inferences	

Answer Key Mphil Biomedical Technology Biology 2019

Sl. No	Key
1	B
2	C
3	B
4	A
5	D
6	C
7	D
8	C
9	B
10	B
11	D
12	B
13	D
14	D
15	C
16	C
17	B
18	A
19	D
20	D
21	B
22	A
23	A
24	A
25	A
26	D
27	A
28	C
29	A
30	A
31	C
32	B
33	A
34	D
35	C
36	A
37	A
38	D
39	B
40	B

41	C
42	D
43	A
44	B
45	B
46	D
47	A
48	B
49	B
50	A
51	B
52	B
53	D
54	A
55	B
56	C
57	C
58	D
59	C
60	B