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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June / July 2024 Semester End Make-Up Examinations

Programme: B.E.

Branch: ES Cluster (EC, EE, EI & ET)

Course Code: 23ES3BSBFE

Course: Biology for Engineers

Semester: III

Duration: 1 hr.

Max Marks: 50

Instructions: 1. Answer all questions from Part A
2. Answer three full questions from Part B

Part A			CO	PO	Marks
1		Which of the following receptors are responsible for smell detection? A. Olfactory B. Gustatory C. Somatosensory D. All of the above	CO 3	PO 6	1
2		Arrange the penetrating power of the particles in ascending order A. Alpha (highest) Beta (moderate) Gamma (least) B. Beta (highest) Alpha (moderate) Gamma (least) C. Alpha (least) Beta (moderate) Gamma (highest) D. None of the above	CO3	PO 6	1
3		Which among the following has the highest penetrating power ? A. Alpha B. Beta C. Gamma D. None of the above	CO3	PO6	1
4		What does the acronym SONAR stand for: A. Sound navigation and ranging B. Sound navigation and reflection C. Sound observation and ranging D. Sound observation and ranging	CO3	PO6	1
5		Scaffold to act as a template for A. Tissue Regeneration B. Blood Pressure Measurement C. Blood Sugar Level Measurement D. None of The Above	CO1	-	1

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

6		Scaffolds are produced using techniques like: A. 3D printing and Decellularizing tissues. B. Injection molding C. Waterbed soaking D. All of The Above	CO1	-	1
7		An artificial kidney is made of: A. Plant-based Tissues B. Latex rubber C. Hollow cellulose fibers or hollow polyester fibers D. All of The Above	CO1	-	1
8		Span of Bioprosthetic Valves is: A. 2 years B. 6 years C. 10-20 years D. 4 years	CO1	-	1
9		Bioprosthetic Valves are made from processed animal tissues of: A. Oryctolagus Cuniculus B. Porcine and Bovine C. Selachimorpha D. Canis lupus familiaris	CO1	-	1
10		The effect inspired from lotus leaf used in self-cleaning surfaces is: A. Hydrophobicity B. Super connectivity C. Hydration D. Durability	CO1	-	1
11		Short term effects of radiation occur when A. Human receive greater amount of radiation for a short period of time B. Human receive little amount of radiation for a short period of time C. Human receive greater amount of radiation for a long period of time D. Human receive constant amount of radiation for a long period of time	CO3	PO6	1
12		What is a potential benefit that could one day be achieved with 3D bioprinting? A. To help patients who are in need of new tissues or organs B. To aid in the testing of new drugs C. To reduce the risk of transplant rejection using host cells D. All of the above	CO2	PO1	1

13	What is a current capability of 3D bioprinting? A. Printing tissue samples for use in drug testing B. Printing small organs like ears or bones C. Printing complex, functional organs like hearts and kidneys D. All of the above	CO2	PO1	1
14	Which of the following part contains mechanoreceptors? A. Skin B. Muscles C. Joints D. All of the above	CO1	-	1
15	The three parts of the human ear contributing in hearing are:- A. Cochlea, ear ossicles and tympanum B. Semi-circular canals, utriculus and sacculus C. Eustachian tube, tympanum and utriculus D. Perilymph, ear ossicles and semi-circular canals	CO2	PO1	1
16	The secretion of lachrymal gland is A. Watery B. Acidic C. Oily D. Alkaline	CO2	PO1	1
17	Macula lutea is a part of A. Optic nerve B. Sclerotic C. Choroid D. Retina	CO2	PO1	1
18	Lacrimal glands are concerned with secretion of A. Hormones B. Digestive juices C. Enzymes D. Tears	CO2	PO1	1
19	Which of the following statements is not true? A. Keratinocytes protect skin and muscles from heat and chemicals B. papillary region is responsible for the figure prints C. Markel cells are used for touch sensations D. Apoptosis takes place in stratum granulosum	CO2	PO1	1
20	34. What is the abnormal thickening of stratum Corneum called? A. Dandruff B. Callus C. Comedo D. Abrasion	CO2	PO1	1

Part B					
1	a)	Explain types of indirect ionizing radiation.	<i>CO 3</i>	<i>PO6</i>	5
	b)	Discuss the biological damage effects as a consequence of radiation	<i>CO 3</i>	<i>PO6</i>	5
2	a)	Explain the concept of bird flying with respect to GPS	<i>CO 1</i>	-	5
	b)	Differentiate between deterministic and stochastic effect.	<i>CO 3</i>	<i>PO6</i>	5
3	a)	Explain the advantages and disadvantages of bioprosthetic valves	<i>CO 1</i>	-	5
	b)	Explain photosynthesis with relevance to photovoltaic cell along with a neat diagram.	<i>CO 1</i>	-	5
4	a)	Discuss the various materials used for 3D printing of human ears.	<i>CO 2</i>	<i>PO1</i>	5
	b)	Explain the steps involved in additive manufacturing of printed bone.	<i>CO 2</i>	<i>PO1</i>	5
5	a)	Give the comparisons between 3D printer and bio printer.	<i>CO 2</i>	<i>PO1</i>	5
	b)	Write a note on artificial organ development with example.	<i>CO 1</i>	-	5
