Total No. of Printed Pages: 21

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# A

### PG-EE-2021

SUBJECT: Life Sciences

SET-X

12497

	* Sr. No		
Time : 11/4 Hours Roll No. (in figures)	Max. Marks : 100 (in words)		Total Questions : 100
Name		_Date of Birth	
Father's Name	Mother's Na	me	
Date of Examination		v v	
(Signature of the Candidate)		(Signate	ure of the Invigilator)

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- 1. All questions are compulsory.
- 2. The candidates must return the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
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- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

- 1. All the following may be methods for the inhibition of microbial growth by antibiotics except:
  - (1) Antibiotics disrupt cell wall synthesis.
  - (2) Antibiotics interfere with cell membrane function.
  - (3) Antibiotics prevent the release of energy from ATP.
  - (4) Antibiotics inhibit the synthesis of protein.
- 2. In which of the following would you place the plants having vascular tissue lacking seeds?
  - (1) Pteridophytes
  - (2) Gymnosperms
  - (3) Bryophytes
  - (4) Algae
- **3.** Apomixis is a type of reproduction in plants in which?
  - (1) Fertilization does not take place.
  - (2) Male nucleus takes part in fertilization.
  - (3) Embryo formation does not take place.
  - (4) Generative nucleus takes part in fertilization.
- 4. From which of the following algae, agar is commercially extracted?
  - (A) Gracillaria
  - (B) Fucus
  - (C) Sargassum
  - (D) Gelidium
  - (E) Turbinaria
  - (1) C and E
  - (2) B and C
  - (3) D and E
  - (4) A and D

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- 5. In which one of the following pairs of diseases is viral as well as transmitted by mosquitoes?
  - (1) Elephantiasis and dengue
- (2) Yellow fever and sleeping sickness
- (3) Encephalitis and sleeping sickness (4) Yellow fever and dengue
- 6. A free living nitrogen-fixing cyanobacterium which can also form symbiotic association with the water fern Azolla is:
  - (1) Tolypothrix

(2) Nostoc

(3) Chlorella

(4) Anabaena

#### 7. Ionophores are:

- (1) the gating mechanisms associated with the transport of ions.
- (2) intrinsic proteins that passively transport ions.
- (3) chemicals that form pores in the plasma membrane and allow ions to cros.
- (4) intrinsic proteins that actively transport ions.
- The trans Golgi network is:
  - (1) the intermediate compartment between the ER and the Golgi.
  - (2) the part of the Golgi where fusion of vesicles from the ER occurs.
  - (3) where sorting of proteins to the lysosomes, plasma membrane and cell exterior occurs.
  - (4) the network of vesicles that transport proteins between Golgi cisternae.
- 9. Most human cells are diploid with total DNA content of 2C. The DNA content increases to 4C before the onset of mitosis. At anaphase, the DNA content of each cluster will be:
  - (1) 4C
  - (2) 2C
  - (3) 1C
  - (4) 3C

- 10. Malignant cancer cells have all of the following properties except:
  - (1) unregulated cell division
  - (2) inhibition of angiogenesis
  - (3) resistance to apoptosis
  - (4) cellular immortality
- 11. Cytokines are produced by cells of the immune system in response to various physiological stimuli that:
  - (1) modulate cell function through subsequent cell differentiation or cell proliferation.
  - (2) facilitate cell lysis.
  - (3) cause glycosylation of immunoglobulins.
  - (4) cause histamine release.
- **12.** In what way, if any, does the chromosomal determination of sex differ in Drosophila and humans?
  - (1) In humans, the Y-chromosome determines maleness, with female development being a default process, but in Drosophila, the presence of two X-chromosomes determines femaleness, and male development is the default process.
  - (2) In humans, the Y-chromosome determines maleness, but in Drosophila, the ratio of X-chromosomes to autosomes determines maleness or femaleness.
  - (3) In humans, it is the presence of only one X-chromosome that triggers male development and two X-chromosomes trigger female development, just as occurs in Drosophila.
  - (4) In human males, a single Y-chromosome is present in the absence of an X-chromosome, while in Drosophila, a single X-chromosome is present in the absence of a Y-chromosome.
- **13.** How many generations are present in the seed of gymnosperm?
  - (1) 2

(2) 3

(3) 1

(4) 4

- 14. Bryophytes are *not* characterised by :
  - (1) Sporophyte parasitic over gametophyte
  - (2) Independent gametophyte
  - (3) Absence of vascular tissues
  - (4) Independent sporophyte
- 15. Stems and leaves of bryophytes are:
  - (1) Analogous to vascular plants
  - (2) Homologous to vascular plants
  - (3) Analogous to algae & fungal thallus
  - (4) None of these
- **16.** The dominant photosynthetic phase in the life-cycle of pteridophyta is equivalent to the:
  - (1) Gametophytic phase of bryophyta
  - (2) Sporophytic phase of bryophyta
  - (3) Gametophytic phase of pteridophytes
  - (4) Gametophytic phase of gymnosperm
- 17. In Pteridophytes, reduction division occurs when:
  - (1) Prothallus is formed
  - (2) Sex organs are formed
  - (3) Spores are formed
  - (4) Gametes are formed
- 18. In which of the following gametophyte is not independent free living?
  - (1) Pinus
  - (2) Funaria
  - (3) Marchantia
  - (4) Pteris

- 19. Seasonal activity of vascular cambium is influenced by many factors, except :
  - (1) Geographical location of plant
  - (2) Relative humidity and temperature
  - (3) Photoperiod and water supply
  - (4) Leaf orientation
- 20. When secondary growth is initiated in dicot stem, what will happen first?
  - (1) The cells of cambium divide periclinally to form xylem mother cells
  - (2) Interfascicular cambium join with intrafascicular cambium
  - (3) Parenchymatous cells present between vascular bundles become meristematic
  - (4) Pith get obliterated
- 21. Select one of the following of important features distinguishing Gnetum from Cycas and Pinus and showing affinities with angiosperms:
  - (1) Embryo development and apical meristem
  - (2) Absence of resin duct and leaf venation
  - (3) Presence of vessel elements and absence of archegonia
  - (4) Perianth and two integuments
- **22.** Which one of the following is heterosporous?
  - (1) Equisetum
  - (2) Dryopteris
  - (3) Salvinia
  - (4) Adiantum
- 23. A system of classification, in which a large number of traits are considered, is:
  - (1) Natural system
  - (2) Phylogenetic system
  - (3) Artificial system
  - (4) Synthetic system

24	. The book 'Genera plantarum' was w	vritten by:
	(1) Engler & Prantl	(2) Bentham & Hooker
	(3) Bessey	(4) Hutchinson
25.	. Phylogenetic classification is one w	hich is based on:
	(1) Overall similarities	(2) Utilitarian system
	(3) Habits of plants	(4) Common evolutionary descent
26.	Endosperm of gymnosperm is ontog	genetically similar to angiospermic:
	(1) Endosperm	(2) Embryo sac
	(3) Archegonium	(4) Megasporangia
27.	Flowering plants are more successfu	al than other members of the plant world because
	(1) They are large and have a good	
	(2) They carry out variety of pollina	
	(3) The protected plant embryo can	survive in the period of unfavourable conditions
	(4) All of these	
28.	A. Heterospory is found in all mem	bers of pteropsida :
	B. Selaginella is advance among pt	eridophytes as it produces seeds
	C. Pinus leaves are monomorphic adaptation against transpiration	, pinnate compound and have sunken stomata
	D. Sporic meiosis is characteristic Chlamydomonas and Ulothrix.	e of life cycle in many organisms like Volvo
	(1) All are incorrect	(2) Both B and C are correct
	(3) Only B is correct	(4) Only D is incorrect
29.	Which phytohormone is synthesised	in ripened fruits ?
	(1) ABA	(2) Auxin
	(3) Cytokinin	(4) Ethylene

- **30.** Which of the following is incorrect about ethylene?
  - (1) Promotes root hair formation
  - (2) It is natural and derivative of carotenoids
  - (3) It increases the number of female flowers
  - (4) It causes synchronisation of flowering and fruit set in pineapples
- 31. Select a correct match:
  - (1) GA, Early seed production in conifers
  - (2) Cytokinin Synchronise fruit set in pineapples
  - (3) Auxin Overcomes senescence
  - (4) Ethylene Seed maturation and development
- 32. Where is the respiratory electron transport system (ETS) located in plants?
  - (1) Intermembrane space
  - (2) Mitochondrial matrix
  - (3) Outer mitochondrial membrane
  - (4) Inner mitochondrial membrane
- 33. Respiratory Quotient (RQ) value of tripalmitin is:
  - (1) 0.9
  - (2) 0.7
  - (3) 0.07
  - (4) 0.09
- **34.** Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of glycolysis, is catalyzed by :
  - (1) Aldolase
  - (2) Hexokinase
  - (3) Enolase
  - (4) Phosphofructokinase

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35.	How many ATP molecules will be	produced in muscles by aerobic oxidation of one
	molecule of glucose?	nessment the state of the state of
	(1) 2	(2) 4
	(3) 36	(4) 34
36.	Plants, but not animals, can convert f	atty acids to sugars by a series of reactions called:
	(1) Photosynt	
	(2) Krebs cycle	
	(3) Glycolysis	
	(4) Glyoxylate cycle	
37.	Pasteurization is a process, which n temperature and for how much durati	neans heating of drinks. It is carried out, at what
	(1) 70°C and 60 minutes	
	(2) 80°C and 30 minutes	
	(3) 120°C and 60 minutes	
	(4) 60-70°C and 30 minutes	Committees and an extraction county by
38.	Lenticels are involved in:	
	(1) Gaseous exchange	(2) Food Transport
	(3) Photosynthesis	(4) Transpiration
39.	Guttation is the result of:	
	(1) Osmosis	(2) Root pressure
	(3) Diffusion	(4) Transpiration
40.	Photosynthetic Active Radiation (PA	R) has the following range of wavelengths:
	(1) 400-700 nm	
	(2) 450-950 nm	
	(3) 340-450 nm	
	(4) 500-600 nm	
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- 41. The C 4 plants are photosynthetically more efficient than C 3 plants because :
  - (1) They have more chloroplasts
  - (2) The CO<sub>2</sub> compensation point is more
  - (3) CO<sub>2</sub> generated during photorespiration is trapped and recycled through PEP carboxylase
  - (4) The CO<sub>2</sub> efflux is not prevented
- **42.** The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by :
  - (1) T.H. Morgan
  - (2) Gregor J. Mendel
  - (3) Alfred Sturtevant
  - (4) Sutton Boveri
- 43. What is the genetic disorder in which an individual has an overall masculine development gynaecomastia, and is sterile?
  - (1) Turner's syndrome

(2) Klinefelter's syndrome

(3) Edward syndrome

- (4) Down's syndrome
- **44.** A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by :
  - (1) Only daughters

- (2) Only sons
- (3) Both sons and daughters
- (4) Only grandchildren
- 45. Which one of the following discoveries resulted in a Nobel Prize?
  - (1) X-rays induce sex-linked recessive lethal mutations
  - (2) Cytoplasmic inheritance
  - (3) Recombination of linked genes
  - (4) Genetic engineering

46.	<ul> <li>Normally DNA molecule has A alternative valency status owing t</li> </ul>	-T, G-C pairing. However, these bases can exist in o rearrangements called:
	(1) Frame-shift mutation	(2) Tautomerisational mutation
	(3) Analog substitution	(4) Point mutation
47.	The most striking example of point	nt mutation is found in a disease called:
	(1) Down's syndrome	(2) Sickle cell anaemia
	(3) Edward syndrome	(4) Night blindness
48.	When two genetic loci produce is considered to be:	dentical phenotypes in cis and trans position, they are
	(1) Multiple alleles	
	(2) The parts of same gene	
	(3) Pseudoalleles	
	(4) Different genes	
49.	What map unit (Centimorgan) is a	dopted in the construction of genetic maps?
		o expressed genes representing 10% cross over
		o expressed genes representing 100% cross over
		nes an chromosomes, representing 1 % cross over
		nes on chromosomes, representing 50% cross over
50.	Expressed Sequence Tags (ESTS)	
	(1) Genes expressed as RNA	(2) Polypeptide expression
	(3) DNA polymorphism	(4) Novel DNA sequences
51.		me project led to the development of:
	(1) Bioinformatics	
	(2) Eugeneics	
	(3) Biotechnology	
	(4) Genetic engineering	
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52.	If there are 999 bases in an RNA that cod base at position 901 is deleted such that how many codons will bealtered?	es for a protein with 333 amino acids and the the length of the RNA becomes 998 bases,
	(1) 1	(2) 11
		(4) 333
53.	(1) Griffith	aterial came from the experiments of:
	(2) Hershey and Chase	
	(3) Avery, Mcleod and McCarty	
	(4) Hargobind Khurana	
54.	. Which one of the following is not a gased	ous biogeochemical cycle in ecosystem?
J 1.	(1) Nitrogen cycle	(2) Carbon cycle
, v	(3) Sulphur cycle	(4) Phosphorus cycle
55	Which of the following ecological pyran	nids is generally inverted?
	(1) Pyramid of numbers in grassland	
	(2) Pyramid of energy	
	(3) Pyramid of biomass in a forest	
	(4) Pyramid of biomass in a sea	
56	a landary mould would	be obtained with the following data?
	Secondary consumer: 120 g	

Primary consumer: 60g

Primary producer: 10 g

- (1) Inverted pyramid of biomass
- (2) Pyramid of energy
- (3) Upright pyramid of biomass
- (4) Upright pyramid of numbers

**57.** Which ecosystem has the maximum biomass?

A	(1) Forest ecosystem	(2) Grassland ecosystem
	(3) Pond ecosystem	(4) Lake ecosystem
58.	. Limit of BOD prescribed by Centra industrial and municipal waste water in	l Pollution Control Board for the discharge
	(1) < 3.0  ppm	(2) < 10 ppm
	(3) < 100 ppm	(4) < 30 ppm
59.	More than 70% of world's freshwater i	s contained in :
	(1) Antarctica	
	(2) Glaciers and Mountains	
	(3) Greenland	
	(4) Polar ice	
60.	The process by which organisms wit phenotypic adaptations in response to a	h different evolutionary history evolve simi common environmental challenge, is called:
	(1) Convergent evolution	
	(2) Non-random evolution	
	(3) Adaptive radiation	
	(4) Natural selection	
61.	The tendency of population to remain in	genetic equilibrium may be disturbed by:
	(1) Lack of migration	(2) Lack of mutations
	(3) Lack of random mating	(4) Random mating
62.	The two antibiotic resistance genes on v	
	(1) Tetracycline and Kanamycin	tetor pBR322 are for .
	(2) Ampicillin and Tetracycline	
	(3) Ampicillin and Chloramphenicol	
	(4) Chloramphenicol and Tetracycline	We think whether he was
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- 63. Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?
  - (1) BOD incubator

(2) Sludge digester

(3) Industrial oven

- (4) Bioreactor
- **64.** DNA precipitation out of a mixture of biomolecules can be achieved by treatment with:
  - (1) Isopropanol
  - (2) Chilled ethanol
  - (3) Methanol at room temperature
  - (4) Chilled chloroform
  - 65. Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the incorrect statement.
    - (1) The enzyme cuts DNA molecule at identified position within the DNA.
    - (2) The enzyme binds DNA at specific sites and cuts only one of the two strands.
    - (3) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand.
    - (4) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA.
  - 66. The correct order of steps in Polymerase Chain Reaction (PCR) is:
    - (1) Extension, Denaturation, Annealing
    - (2) Annealing, Extension, Denaturation
    - (3) Denaturation, Annealing, Extension
    - (4) Denaturation, Extension, Annealing
  - 67. Enzyme used in ELISA test is:
    - (1) Endonuclease
    - (2) Ligase
    - (3) Peroxidase
    - (4) Polymerase

68.	What will be the pCO <sub>2</sub> and pO <sub>2</sub> in atmos	pheric air as compared to alveoli respectively?
	(1) Low and high	(2) High and low
	(3) High and high	(4) Low and low
69.	In ureotelic animals, urea is formed by:	
	(1) Kreb's cycle	
	(2) EM pathway	
	(3) Ornithine cycle	
	(4) Cori's cycle	
70.	Which one of the following mammalian carbon-dioxide aerobically?	cells is not capable of metabolising glucose to
	(1) Red blood cells	
	(2) White blood cells	
	(3) Unstriated muscle cells	
	(4) Liver cells	
71.	. All enzymes are proteins except :	the state of the s
	(1) Trypsin	
	(2) Pepsin	
	(3) Steapsin	
	(4) Ribozyme and Ribonuclease-P	
72.	. Which of the following is the best evaction?	idence for the lock and key theory of enzyme
	(1) All isolated enzymes have been ide	ntified as protein
	(2) Compounds similar in structure to t	he substrate inhibit the reaction
	(3) Enzymes are found in living organi	sms and speed up certain reaction
	(4) Enzymes determine the direction of	a reaction
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- 73. Co-enzyme is:
  - (1) Always a protein
  - (2) Often a metal
  - (3) Always an inorganic compound
  - (4) Often a vitamin
- 74. A person is eating boiled potato. His food contains:
  - (1) Cellulose, which can be digested by cellulase
  - (2) Starch, which cannot be digested
  - (3) Lactose, which cannot be digested
  - (4) DNA, which can be digested by pancreatic DNAase
- 75. Which of the following is a reducing sugar?
  - (1) Galactose
  - (2) Gluconic acid
  - (3) B-methyl galactoside
  - (4) Sucrose
- **76.** Which of the following hormones is not secreted by duodenum to inhibit the gastric motility?
  - (1) GIP
  - (2) Enterogastrone
  - (3) Secretin
  - (4) Enterokinase
- 77. In case of vertebrates, lacteals are found in:
  - (1) Oesophagus
  - (2) Ear
  - (3) Small intestine
  - (4) Ischium

(1) Active transport	
(2) Osmosis	
(3) Diffusion	
(4) All of these	THE RESIDENCE OF THE PARTY OF T
79. Vomiting centre is located in the:	and the second second second
(1) Medulla oblongata	a property of two best states and the state of the state of two best states and the state of the
(2) Stomach and sometimes in duodenun	a.
(3) GI tract	
(4) Hypothalamus	
80. Which one of the following vitamins car	be synthesised by bacteria inside the gut?
(1) D	(2) A
(3) B <sub>1</sub>	(4) C
Which one of the following is a protein	deficiency disease?
(1) Kwashiorkor	
(2) Night blindness	
(3) Eczema	
(4) Cirrhosis	
82. Which of the following statement is in	ncorrect wrt inbreeding !
1 020/20051	ity
2.2	The gone Hill all Children
(3) Inbreeding helps in accumulation	n of deleterious alleles and elimination of desirable
alleles	
(4) Inbreeding helps in developing a	1 pure line sur
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- **83.** What is correct to say about the hormone action in humans?
  - (1) In females, FSH first binds with specific receptors on ovarian cell membrane
  - (2) FSH stimulates the secretion of estrogen and progesterone
  - (3) Glucagon is secreted by B-cells of Islets of langerhans and stimulates glycogenolysis
  - (4) Secretion of thymosins is stimulated with aging
- 84. Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristics of phylum:
  - (1) Protozoa
  - (2) Coelenterata
  - (3) Porifera
  - (4) Mollusca
- 85. Which of the following characteristics is mainly responsible for diversification of insects on land?
  - (1) Eyes
  - (2) Segmentation
  - (3) Bilateral symmetry
  - (4) Exoskeleton
- **86.** Which of the following endoparasites of humans does show viviparity?
  - (1) Ascaris lumbricoides

(2) Ancylostoma duodenale

(3) Enterobius vermicularis

(4) Trichinella spiralis

- 87. Select the Taxon mentioned which represents both marine and fresh water species.
  - (1) Echinoderms
  - (2) Ctenophora
  - (3) Cephalochordata
  - (4) Cnidaria

- 88. Which one of the following living organisms completely lacks a cell wall?
  - (1) Cyanobacteria
  - (2) Sea-fan(Gorgonia)
  - (3) Saccharomyces
  - (4) Blue-green algae
- 89. Biological organisation starts with:
  - (1) Cellular level
  - (2) Organismic level
  - (3) Atomic level
  - (4) Submicroscopic molecular level
- 90. Peripatus is a connecting link between:
  - (1) Coelenterata and Porifera
  - (2) Ctenophora and Platyhelminthis
  - (3) Mollusca and Echinodermata
  - (4) Annelida and Arthropoda
- 91. Which one of the following organisms is scientifically correctly named, correctly Printed according to the International Rules of Nomenclature and correctly described?
  - (1) E.coli Full name Entamoeba coli, a commonly occuring bacterium in human intestine
  - (2) Musca domestica The common house lizard, a reptile
  - (3) Plasmodium falciparum A protozoan pathogen causing the most serious type of malaria
  - (4) Felis tigris The Indian tiger, well protected in Gir forests
  - 92. What is true for mammalia?
    - (1) Platypus is oviparous
- (2) Bats have feathers
- (3) Elephant is ovoviviparous
- (4) Diaphragm is absent in them

93.	Which of the following character is present in all chordates?
	(1) Diaphragm
	(2) Vertebral column
	(3) Pharyngeal gill clefts

- 94. In which of the following animal post anal tail is found?
  - (1) Earthworm
  - (2) Lower invertebrate

(4) Dorsal solid nerve cord

- (3) Scorpion
- (4) Snake
- 95. In which of the following notochord is present in embryonic stage?
  - (1) All chordate
  - (2) Some chordates
  - (3) Vertebrates
  - (4) Non chordates
- 96. Given below are four matches of an animal and its kind of respiratory organ:
  - A. Silver fish Trachea
  - B. Scorpion Book lung
  - C. Sea squirt Pharyngeal gills
  - D. Dolphin Skin

The correct matches are

- (1) A and B
- (2) A, B and C
- (3) B and D
- (4) C and D

- 97. Which one of the following phyla is correctly matched with its two general characteristics?
  - (1) Mollusca Normally oviparous and development through a trochophore or veliger
  - (2) Arthropoda Body divided into head, thorax and abdomen and respiration by tracheae
  - (3) Chordata Notochord at some stage and separate anal and urinary openings to the outside
  - (4) Echinodermata Pentamerous radial symmetry and mostly internal fertilization
  - 98. Which of the following are referred as non-vertebrate chordates?
    - (1) Ciona, Ascidia, Amphioxus
      - (2) Lamprey, Myxine, Shark
      - (3) Scoliodon, Torpedo, Trygon
      - (4) Pristis, Branchiostoma, Scyllium doutorostomes?
    - 99. Lateral line sense organs are absent in:
      - (1) Tadpole larva of frog
      - (2) Bony fishes
      - (3) Reptiles
      - (4) Cartilaginous fishes
  - 100. The termination of gastrulation is indicated by:
    - (1) closure of neural tube
    - (2) closure of blastopore
    - (3) obliteration of archenteron
    - (4) obliteration of blastocoel

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Question No		В	С	D
1	3	1	1	4
2	1	2	3	2
3	1	2	2	4
4	4	4	3	4
5	4	1	1	1
6	4	1	2	4
7	3	3	2	3
9	3	1	3	1
	2	4	3	1
10	2	3	1	3
11	1	3	3	1
12	2	1	3	3
13	2	3	1	2
14	4	4	2	4
15	1	1	4	4
16 17	1	2	2	1
	3	1	4	1
18	11	1	1	4
20	4	3	4	4
21	3	4	2	1
22	3	4	3	1
23	3	2	1	4
24	1	4	1	2
25	2	4	4	2
26	2	1	4	3
27	4	4	4	4
28	1	1 3	3	4
29	4	1 .	3	1
30	2	1	2	2
31	1	3	2	1
32	4	3	3	1
33	2	2	1	2
34	2	4	3	2
35	3	4	4	4
36	4	1	1	1
37	4	1	2	1
38	1	4	1	3
39	2	4	3	1
40	1	1	4	4
41	1	1	3	3
42	3	4	2	3
43	2	2	4	1
44	3	2	2	3 4
45	1	3	2	
46	2	4	3	2
47	2	4	3	1
48	3	1	1	771
49	3	2		1
50	1	2	3	3

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Syadur Norl

10:00 am			bjects of Life	
Question No.	A	В	С	D
51	1	3	1	3
52	3	3	4	2
53	2	1	2	4
54	4	2	2	2
55	4	4	3	2
56	1	2	4	3
57	1	4	4	3
58	4	1	1	1
59	4	4	2	3
60	1	2	1	1
61	3	1	4	1
62	2	3	2	3
63	4	2	4	1
64	2	3	4	3
65	2	1	1	4
66	3	2	4	4
67	3	2	3	4
68	1	3	1	2
69	3	3	1	4
70	1	1	3	4
71	4	3	1	1
72	2	2	3	3
73	4	4	1	2
74	4	2	3	3
75	1	2	4	1
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77	3	, 3	4	2
78	1	1	2	3
79	1	3	4	3
80	3	1	4	1
81	1	3	1	3
82	3	1	2	3
83	1	1	2	1
84	3	4	4	2
85	4	4	1	4
86	4	4	1	2
87	4	3	3	4
88	2	3	1	1
89	4	2	4	4
90	4	2	3	2
91	3	1	1	3
92	1	3	3	1
93	3	1	2	1
94	4	3	4	4
95	1	4	4	4
96	2	4	1	4
97	1	4	1	3
98	1	2	4	3
99	3	4	4	2
100	4	4	1	2

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(Syadan 2)

Total No. of Printed Pages: 21

## (DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

# В

### PG-EE-2021

SET-X

SUBJECT: Life Sciences

12494

	*	5r. No	
Time: 1¼ Hours		Max. Marks: 100 To	otal Questions : 100
Roll No. (in figures)		Date of Birth	
NameFather's Name		Mother's Name	,
Date of Examination	·		
		(Cianatura 6	of the Invigilator)
(Signature of the Ca	andidate)	(Signature C	Ji the invigilator)

## CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates must return the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

- 1. Cytokines are produced by cells of the immune system in response to various physiological stimuli that:
  - (1) modulate cell function through subsequent cell differentiation or cell proliferation.
  - (2) facilitate cell lysis.
  - (3) cause glycosylation of immunoglobulins.
  - (4) cause histamine release.
  - 2. In what way, if any, does the chromosomal determination of sex differ in Drosophila and humans?
    - (1) In humans, the Y-chromosome determines maleness, with female development being a default process, but in Drosophila, the presence of two X-chromosomes determines femaleness, and male development is the default process.
    - (2) In humans, the Y-chromosome determines maleness, but in Drosophila, the ratio of X-chromosomes to autosomes determines maleness or femaleness.
    - (3) In humans, it is the presence of only one X-chromosome that triggers male development and two X-chromosomes trigger female development, just as occurs in Drosophila.
    - (4) In human males, a single Y-chromosome is present in the absence of an X-chromosome, while in Drosophila, a single X-chromosome is present in the absence of a Y-chromosome.
    - 3. How many generations are present in the seed of gymnosperm?
      - (1) 2

(2) 3

(3) 1

(4) 4

- 4. Bryophytes are *not* characterised by:
  - (1) Sporophyte parasitic over gametophyte
  - (2) Independent gametophyte
  - (3) Absence of vascular tissues
  - (4) Independent sporophyte

- **5.** Stems and leaves of bryophytes are:
  - (1) Analogous to vascular plants
  - (2) Homologous to vascular plants
  - (3) Analogous to algae & fungal thallus
  - (4) None of these
- **6.** The dominant photosynthetic phase in the life-cycle of pteridophyta is equivalent to the:
  - (1) Gametophytic phase of bryophyta
  - (2) Sporophytic phase of bryophyta
  - (3) Gametophytic phase of pteridophytes
  - (4) Gametophytic phase of gymnosperm
- 7. In Pteridophytes, reduction division occurs when:
  - (1) Prothallus is formed
  - (2) Sex organs are formed
  - (3) Spores are formed
  - (4) Gametes are formed
- 8. In which of the following gametophyte is not independent free living?
  - (1) Pinus
  - (2) Funaria
  - (3) Marchantia
  - (4) Pteris
- 9. Seasonal activity of vascular cambium is influenced by many factors, except:
  - (1) Geographical location of plant
  - (2) Relative humidity and temperature
  - (3) Photoperiod and water supply
  - (4) Leaf orientation

- 10. When secondary growth is initiated in dicot stem, what will happen first?
  - (1) The cells of cambium divide periclinally to form xylem mother cells
  - (2) Interfascicular cambium join with intrafascicular cambium
  - (3) Parenchymatous cells present between vascular bundles become meristematic
  - (4) Pith get obliterated
- 11. Which one of the following organisms is scientifically correctly named, correctly Printed according to the International Rules of Nomenclature and correctly described?
  - (1) E.coli Full name Entamoeba coli, a commonly occuring bacterium in human intestine
  - (2) Musca domestica The common house lizard, a reptile
  - (3) Plasmodium falciparum A protozoan pathogen causing the most serious type of malaria
  - (4) Felis tigris The Indian tiger, well protected in Gir forests
- **12.** What is true for mammalia?
  - (1) Platypus is oviparous

- (2) Bats have feathers
- (3) Elephant is ovoviviparous
- (4) Diaphragm is absent in them
- 13. Which of the following character is present in all chordates?
  - (1) Diaphragm
  - (2) Vertebral column
  - (3) Pharyngeal gill clefts
  - (4) Dorsal solid nerve cord
- 14. In which of the following animal post anal tail is found?
  - (1) Earthworm
  - (2) Lower invertebrate
  - (3) Scorpion
  - (4) Snake

- 15. In which of the following notochord is present in embryonic stage?
  - (1) All chordate
  - (2) Some chordates
  - (3) Vertebrates
  - (4) Non chordates
- 16. Given below are four matches of an animal and its kind of respiratory organ:
  - A. Silver fish Trachea
  - B. Scorpion Book lung
  - C. Sea squirt Pharyngeal gills
  - D. Dolphin Skin

The correct matches are

- (1) A and B
- (2) A, B and C
- (3) B and D
- (4) C and D
- 17. Which one of the following phyla is correctly matched with its two general characteristics?
  - (1) Mollusca Normally oviparous and development through a trochophore or veliger larva
  - (2) Arthropoda Body divided into head, thorax and abdomen and respiration by tracheae
  - (3) Chordata Notochord at some stage and separate anal and urinary openings to the outside
  - (4) Echinodermata Pentamerous radial symmetry and mostly internal fertilization

18.	Which of the following are referred as non-vertebrate chordates?
	(1) Ciona, Ascidia, Amphioxus
	(2) Lamprey, Myxine, Shark
	(3) Scoliodon, Torpedo, Trygon
	(4) Pristis, Branchiostoma, Scyllium doutorostomes?
19.	Lateral line sense organs are absent in:
	(1) Tadpole larva of frog
	(2) Bony fishes
	(3) Reptiles
	(4) Cartilaginous fishes
20.	The termination of gastrulation is indicated by:
	(1) closure of neural tube (2) closure of blastopore
	(3) obliteration of archenteron (4) obliteration of blastocoel
21.	All enzymes are proteins except:
	(1) Trypsin
	(2) Pepsin
	(3) Steapsin
	(4) Ribozyme and Ribonuclease-P
22.	Which of the following is the best evidence for the lock and key theory of enzyme action?
	(1) All isolated enzymes have been identified as protein
	(2) Compounds similar in structure to the substrate inhibit the reaction
	(3) Enzymes are found in living organisms and speed up certain reaction

(4) Enzymes determine the direction of a reaction

- 7-			
23.	Co-enzyme	10	
1.3	( O-CHZVIIIC	1.5	
		~~	•

- (1) Always a protein
- (2) Often a metal
- (3) Always an inorganic compound
- (4) Often a vitamin

#### 24. A person is eating boiled potato. His food contains:

- (1) Cellulose, which can be digested by cellulase
- (2) Starch, which cannot be digested
- (3) Lactose, which cannot be digested
- (4) DNA, which can be digested by pancreatic DNA ase

#### 25. Which of the following is a reducing sugar?

- (1) Galactose
- (2) Gluconic acid
- (3) B-methyl galactoside
- (4) Sucrose

## **26.** Which of the following hormones is not secreted by duodenum to inhibit the gastric motility?

- (1) GIP
- (2) Enterogastrone
- (3) Secretin
- (4) Enterokinase

#### 27. In case of vertebrates, lacteals are found in:

- (1) Oesophagus
- (2) Ear
- (3) Small intestine
- (4) Ischium

28.	The movement of ions against the concer	ntration gradient will be:
	(1) Active transport	
	(2) Osmosis	
	(3) Diffusion	
	(4) All of these	
29.	Vomiting centre is located in the:	
	(1) Medulla oblongata	
	(2) Stomach and sometimes in duodenum	n
	(3) GI tract	
	(4) Hypothalamus	
30.	Which one of the following vitamins can	be synthesised by bacteria inside the gut?
	(1) D	(2) A
	$(3) B_1$	(4) C
31.	In history of biology, human genome pro	oject led to the development of:
	(1) Bioinformatics	
	(2) Eugeneics	
	(3) Biotechnology	
	(4) Genetic engineering	
32.	If there are 999 bases in an RNA that co	odes for a protein with 333 amino acids and the
,	base at position 901 is deleted such th	at the length of the RNA becomes 998 bases,
	how many codons will bealtered?	
	(1) 1	(2) 11
	(3) 33	(4) 333

		C
33.	The final proof for DNA as the genetic	material came from the experiments of:
	(1) Griffith	
	(2) Hershey and Chase	
	(3) Avery, Mcleod and McCarty	
	(4) Hargobind Khurana	
34.	Which one of the following is not a ga	seous biogeochemical cycle in ecosystem?
1, 1	(1) Nitrogen cycle	(2) Carbon cycle
	(3) Sulphur cycle	(4) Phosphorus cycle
35.	Which of the following ecological pyr	amids is generally inverted?
	(1) Pyramid of numbers in grassland	
	(2) Pyramid of energy	
	(3) Pyramid of biomass in a forest	
	(4) Pyramid of biomass in a sea	•
36.	What type of ecological pyramid would	ld be obtained with the following data?
	Secondary consumer: 120 g	
	Primary consumer: 60g	
	Primary producer: 10 g	
	(1) Inverted pyramid of biomass	
	(2) Pyramid of energy	
	(3) Upright pyramid of biomass	
	(4) Upright pyramid of numbers	
37.	Which ecosystem has the maximum b	iomass?
	(1) Forest ecosystem	(2) Grassland ecosystem
	(3) Pond ecosystem	(4) Lake ecosystem
PG-E	E-2021/(Life Sciences)(SET-X)/(B)	

38.	Limit of BOD prescribed by Central Pollution Control Board for the discharge	of
	industrial and municipal waste water into natural surface water, is:	

(1) < 3.0 ppm

(2) < 10 ppm

(3) < 100 ppm

(4) < 30 ppm

### 39. More than 70% of world's freshwater is contained in:

- (1) Antarctica
- (2) Glaciers and Mountains
- (3) Greenland
- (4) Polar ice

# **40.** The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called:

- (1) Convergent evolution
- (2) Non-random evolution
- (3) Adaptive radiation
- (4) Natural selection

#### 41. Select a correct match:

- (1) GA, Early seed production in conifers
- (2) Cytokinin Synchronise fruit set in pineapples
- (3) Auxin Overcomes senescence
- (4) Ethylene Seed maturation and development

### 42. Where is the respiratory electron transport system (ETS) located in plants?

- (1) Intermembrane space
- (2) Mitochondrial matrix
- (3) Outer mitochondrial membrane
- (4) Inner mitochondrial membrane

43.	Respiratory Quotient (RQ) value of tripalmitin is:
	(1) 0.9
	(2) 0.7
	(3) 0.07
	(4) 0.09
44	Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of
44.	glycolysis, is catalyzed by:
	(1) Aldolase
	(2) Hexokinase
	(3) Enolase
	(4) Phosphofructokinase
45.	How many ATP molecules will be produced in muscles by aerobic oxidation of one molecule of glucose?
	(1) 2
	(3) 36 (4) 34
46.	Plants, but not animals, can convert fatty acids to sugars by a series of reactions called:
	(1) Photosynt
	(2) Krebs cycle
	(3) Glycolysis
	(4) Glyoxylate cycle
47.	Pasteurization is a process, which means heating of drinks. It is carried out, at what temperature and for how much duration?
	(1) 70°C and 60 minutes
	(2) 80°C and 30 minutes
	(3) 120°C and 60 minutes
	(4) 60-70°C and 30 minutes
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48.	Lenticels are involved in:	• · · · · · · · · · · · · · · · · · · ·			
	(1) Gaseous exchange	(2) Food Transport	,		
	(3) Photosynthesis	(4) Transpiration			
49.	Guttation is the result of:				
	(1) Osmosis	(2) Root pressure	, *		
	(3) Diffusion	(4) Transpiration			
50.	Photosynthetic Active Radiation (Pa	AR) has the following range of wave	elengths:		
	(1) 400-700 nm				
	(2) 450-950 nm				
	(3) 340-450 nm		•		
	(4) 500-600 nm				
51.	Select one of the following of impand Pinus and showing affinities with	portant features distinguishing Gnet ith angiosperms:	um from Cycas		
	(1) Embryo development and apical meristem				
	(2) Absence of resin duct and leaf venation				
	(3) Presence of vessel elements and	d absence of archegonia			
	(4) Perianth and two integuments				
52.	Which one of the following is heter	rosporous ?			
	(1) Equisetum				
	(2) Dryopteris				
	(3) Salvinia				
	(4) Adiantum				
53	3. A system of classification, in which	h a large number of traits are consider	ered, is:		
	(1) Natural system				
	(2) Phylogenetic system		· .		
	(3) Artificial system				
	(4) Synthetic system				
DC I	FF 2021//I ifa Sciancas (SFT-Y)/(R)	남아 그러면서 생물이 그렇게 되어 들었다니?	Р.Т. (		

	54.	54. The book 'Genera plantarum' was written by:		
		(1) Engler & Prantl (2) Bentham & Hooke	er	
		(3) Bessey (4) Hutchinson		
	55.	55. Phylogenetic classification is one which is based on:		
		(1) Overall similarities (2) Utilitarian system	•	
		(3) Habits of plants (4) Common evolution	nary descent	
<b>56.</b> Endosperm of gymnosperm is ontogenetically similar to angiospermic :			permic :	
		(1) Endosperm (2) Embryo sac		
		(3) Archegonium (4) Megasporangia		
	57.	57. Flowering plants are more successful than other members of the	plant would be	
		(1) They are large and have a good vascular tissue system	plant world because:	
		(2) They carry out variety of pollination mechanism		
		(3) The protected plant embryo can survive in the period of unfa	avourable as a 1'c	
, .	, v.	(4) All of these	wouldble conditions	
	58.	58. A. Heterospory is found in all members of pteropsida:		
		B. Selaginella is advance among pteridophytes as it produces se	. 1.	
		C. Pinus leaves are monomorphic, pinnate compound and ha	eeds ave sunken stomata as	
		D. Sporic meiosis is characteristic of life cycle in many organisms like Volve Chlamydomonas and Ulothrix.		
		(1) All are incorrect (2) Both B and C are c	Ormont	
		(3) Only B is correct (4) Only D is incorrect		
	59.	<b>59.</b> Which phytohormone is synthesised in ripened fruits?		
		(1) ABA (2) Auxin		
	,	(3) Cytokinin (4) Ethylene		
-	G-E	G-EE-2021/(Life Sciences)(SET-X)/(B)		

P. T. O.

60.	Which of the following is incorrect about et	hylene?	
	(1) Promotes root hair formation		
	(2) It is natural and derivative of carotenoid	ls	
	(3) It increases the number of female flower	rs	
	(4) It causes synchronisation of flowering a	and fruit set in pineapples	
61.	The C 4 plants are photosynthetically more	efficient than C 3 plants because:	
	(1) They have more chloroplasts		
	(2) The CO <sub>2</sub> compensation point is more		
	(3) CO <sub>2</sub> generated during photorespiration carboxylase	on is trapped and recycled through PEP	
	(4) The CO <sub>2</sub> efflux is not prevented		
62.	The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by:		
	(1) T.H. Morgan	•	
	(2) Gregor J. Mendel		
	(3) Alfred Sturtevant		
	(4) Sutton Boveri		
63.	. What is the genetic disorder in which development gynaecomastia, and is sterile	an individual has an overall masculine?	
	(1) Turner's syndrome (2	2) Klinefelter's syndrome	
	(3) Edward syndrome (4)	Down's syndrome	
64.	. A woman has an X-linked condition on on can be inherited by:	te of her X chromosomes. This chromosome	
	(1) Only daughters (2	2) Only sons	
	(3) Both sons and daughters (4)	1) Only grandchildren	

PG-EE-2021/(Life Sciences)(SET-X)/(B)

00.	which one of the following discoveries resulted in a Nobel Prize?		
	(1) X-rays induce sex-linked recessive lethal mutations		
	(2) Cytoplasmic inheritance		
	(3) Recombination of linked genes		
	(4) Genetic engineering		
66.	Normally DNA molecule has A-T, G-C pairing. However, these bases can exist in alternative valency status owing to rearrangements called:		
	(1) Frame-shift mutation (2) Tautomerisational mutation		
	(3) Analog substitution (4) Point mutation		
67.	The most striking example of point mutation is found in a disease called:		
	(1) Down's syndrome (2) Sickle cell anaemia		
	(3) Edward syndrome (4) Night blindness		
68.	8. When two genetic loci produce identical phenotypes in cis and trans position, they considered to be:		
	(1) Multiple alleles		
	(2) The parts of same gene		
	(3) Pseudoalleles		
	(4) Different genes		
69	. What map unit (Centimorgan) is adopted in the construction of genetic maps?		
	(1) A unit of distance between two expressed genes representing 10% cross over		
	(2) A unit of distance between two expressed genes representing 100% cross over		
	(3) A unit of distance between genes an chromosomes, representing 1 % cross over		
	(4) A unit of distance between genes on chromosomes, representing 50% cross over		
70	Expressed Sequence Tags (ESTS) refers to :		
	(1) Genes expressed as RNA (2) Polypeptide expression		
	(3) DNA polymorphism (4) Novel DNA sequences		
PG-	EE-2021/(Life Sciences)(SET-X)/(B)		

P. T. O.

71.	The tendency of population to remain in genetic equilibrium may be disturbed by :		
	(1) Lack of migration	(2) Lack of mutations	
	(3) Lack of random mating	(4) Random mating	
72.	The two antibiotic resistance genes	s on vector pBR322 are for:	
	(1) Tetracycline and Kanamycin		
	(2) Ampicillin and Tetracycline		
	(3) Ampicillin and Chloramphenic	col	
	(4) Chloramphenicol and Tetracyc	line	
73.	Which one of the following equipma large scale, for industrial product	nents is essentially required for growing microbes on ion of enzymes?	
	(1) BOD incubator	(2) Sludge digester	
	(3) Industrial oven	(4) Bioreactor	
74.	DNA precipitation out of a mixtu with:	are of biomolecules can be achieved by treatment	
	(1) Isopropanol		
	(2) Chilled ethanol		
	(3) Methanol at room temperature		
	(4) Chilled chloroform		
75.	Following statements describe Endonuclease. Identify the incorrect	the characteristics of the enzyme Restriction t statement.	
	(1) The enzyme cuts DNA molecul	e at identified position within the DNA.	
	(2) The enzyme binds DNA at spec	ific sites and cuts only one of the two strands.	
	(3) The enzyme cuts the sugar-phos	sphate backbone at specific sites on each strand.	
	(4) The enzyme recognizes a specif	ic palindromic nucleotide sequence in the DNA.	

PG-EE-2021/(Life Sciences)(SET-X)/(B)

76.	The correct order of steps in Polymerase	Chain Reaction (PCR) is:
	(1) Extension, Denaturation, Annealing	
	(2) Annealing, Extension, Denaturation	
	(3) Denaturation, Annealing, Extension	
	(4) Denaturation, Extension, Annealing	
77.	Enzyme used in ELISA test is:	
	(1) Endonuclease	
	(2) Ligase	
i e	(3) Peroxidase	
	(4) Polymerase	
78.	What will be the pCO <sub>2</sub> and pO <sub>2</sub> in atmos	spheric air as compared to alveoli respectively?
	(1) Low and high	(2) High and low
	(3) High and high	(4) Low and low
79.	In ureotelic animals, urea is formed by:	
	(1) Kreb's cycle	
	(2) EM pathway	
	(3) Ornithine cycle	
	(4) Cori's cycle	
80.	Which one of the following mammalian carbon-dioxide aerobically?	cells is not capable of metabolising glucose to
	(1) Red blood cells	
	(2) White blood cells	
	(3) Unstriated muscle cells	
	(4) Liver cells	
C.F.F	C-2021/(Life Sciences)(SET-X)/(B)	

- **81.** All the following may be methods for the inhibition of microbial growth by antibiotics except:
  - (1) Antibiotics disrupt cell wall synthesis.
  - (2) Antibiotics interfere with cell membrane function.
  - (3) Antibiotics prevent the release of energy from ATP.
  - (4) Antibiotics inhibit the synthesis of protein.
- **82.** In which of the following would you place the plants having vascular tissue lacking seeds?
  - (1) Pteridophytes
  - (2) Gymnosperms
  - (3) Bryophytes
  - (4) Algae
- 83. Apomixis is a type of reproduction in plants in which?
  - (1) Fertilization does not take place.
  - (2) Male nucleus takes part in fertilization.
  - (3) Embryo formation does not take place.
  - (4) Generative nucleus takes part in fertilization.
- 84. From which of the following algae, agar is commercially extracted?
  - (A) Gracillaria
  - (B) Fucus
  - (C) Sargassum
  - (D) Gelidium
  - (E) Turbinaria
  - (1) C and E
  - (2) B and C
  - (3) D and E
  - (4) A and D

			В
85.	In which one of the following pairs of mosquitoes?	of diseases is viral as well as transmitted l	oy
	(1) Elephantiasis and dengue	(2) Yellow fever and sleeping sickness	
	(3) Encephalitis and sleeping sickness	(4) Yellow fever and dengue	
86.	A free living nitrogen-fixing cyanobacte	rium which can also form symbiotic associat	ion

(1) Tolypothrix

with the water fern Azolla is:

(2) Nostoc

(3) Chlorella

(4) Anabaena

#### 87. Ionophores are:

- (1) the gating mechanisms associated with the transport of ions.
- (2) intrinsic proteins that passively transport ions.
- (3) chemicals that form pores in the plasma membrane and allow ions to cros.
- (4) intrinsic proteins that actively transport ions.

#### **88.** The trans Golgi network is:

- (1) the intermediate compartment between the ER and the Golgi.
- (2) the part of the Golgi where fusion of vesicles from the ER occurs.
- (3) where sorting of proteins to the lysosomes, plasma membrane and cell exterior occurs.
- (4) the network of vesicles that transport proteins between Golgi cisternae.
- Most human cells are diploid with total DNA content of 2C. The DNA content increases to 4C before the onset of mitosis. At anaphase, the DNA content of each cluster will be:
  - (1) 4C
  - (2) 2C
  - (3) 1C
  - (4) 3C

90.	Malignant cancer cells have all of the	ne following properties except:		
	(1) unregulated cell division	(2) inhibition of angiogenesis		
	(3) resistance to apoptosis	(4) cellular immortality		
91.	Which one of the following is a protein deficiency disease?			
	(1) Kwashiorkor	(2) Night blindness		
	(3) Eczema	(4) Cirrhosis		
92.	Which of the following statement is	incorrect wrt inbreeding?		
,	(1) Inbreeding increases homozygosity			
	(2) Inbreeding exposes harmful rec	(2) Inbreeding exposes harmful recessive gene that are eliminated by selection		
		on of deleterious alleles and elimination of desirable		
	(4) Inbreeding helps in developing	a pure-line animal		
93.	What is correct to say about the horn	mone action in humans?		
	(1) In females, FSH first binds with specific receptors on ovarian cell membrane			
	(2) FSH stimulates the secretion of estrogen and progesterone			
	(3) Glucagon is secreted by B glycogenolysis	-cells of Islets of langerhans and stimulates		
	(4) Secretion of thymosins is stimul	ated with aging		
94.	Body having meshwork of cells, in cells and indirect development are the	ternal cavities lined with food filtering flagellated ne characteristics of phylum:		
	(1) Protozoa	(2) Coelenterata		
	(3) Porifera	(4) Mollusca		
95.	Which of the following characterinsects on land?	stics is mainly responsible for diversification of		
	(1) Eyes	(2) Segmentation		
	(3) Bilateral symmetry	(4) Exoskeleton		
PG-E	E-2021/(Life Sciences)(SET-X)/(B)	P. T. O.		

96.	Which of the following endoparasites of humans does show viviparity?	
	(1) Ascaris lumbricoides	(2) Ancylostoma duodenale
	(3) Enterobius vermicularis	(4) Trichinella spiralis
97.	. Select the Taxon mentioned which rep	epresents both marine and fresh water species
	(1) Echinoderms	
,	(2) Ctenophora	
	(3) Cephalochordata	
	(4) Cnidaria	
98.	. Which one of the following living org	ganisms completely lacks a cell wall?
	(1) Cyanobacteria	
	(2) Sea-fan(Gorgonia)	
	(3) Saccharomyces	
	(4) Blue-green algae	
99.	. Biological organisation starts with :	
	(1) Cellular level	
	(2) Organismic level	
	(3) Atomic level	
	(4) Submicroscopic molecular level	
100.	Peripatus is a connecting link between	n:
	(1) Coelenterata and Porifera	
	(2) Ctenophora and Platyhelminthis	
	(3) Mollusca and Echinodermata	
	(4) Annelida and Arthropoda	
PG-EF	E-2021/(Life Sciences)(SET-X)/(B)	

10:00 ar	7	-	Subjects of Li	fe Sciences
Question No.	A	В	С	D
1	3	1	1	4
2	1	2	3	2
3	1	2	2	4
4	4	4	3	4
5	4	1	1	1
6	4	1	2	4
7	3	3	2	3
8	3	1	3	1
9	2	4	3	1
10	2	3	1	3
11	1	3	3	1
12	2	1	3	3
13	2	3	1	2
14	4	4	2	4
15	1	1	4	4
16	1	2	2	1
17	3	1	4	1
18	1	1	1	4
19	4	3	4	
20	3	4	2	4
21	3	4	3	1
22	3	2		1
23	1	4	1 1	4
24	2	4	4	2
25	4	1	4	2
26	2	4		3
27	4	3	4	4
28	1	1 .	3	4
29	4	1	3 2	1
30	2	3		2
31	1	1	2	1
32	4	3	3	1
33	2	2	1	2
34	2	4	3	2
35	3	4	4	4
36	4	1	1	1
37	4	1	2	1
38	1	4	1	3
39	2	4	1	1
40	1	1	3	4
41	1		4	3
42	3	1	3	3
43	2	4	2	1
44	3	2	4	3
45	1	2	2	4
46	2	3	2	1
47	The second of th	4	3	2
48	3	4	3	1
49		1	1	1
50	3	2	3	3
30	1	1	1	4

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10:00 an			Subjects of Li	te Sciences
Question No.	A	В	С	D
51	1	3	1	3
52	3	3	4	2
53	2	1	2	4
54	4	2	2	2
55	4	4	3	2
56	1	2	4	3
57	1	4	4	3
58	4	1	1	1
59	4	4	2	3
60	1	2	1	1
61	3	1	4	1
62	2	3	2	3
63	4	2	4	1
64	2	3	4	3
65	2	1	1	4
66	3	2	4	4
67	3	2	3	4
68	1	3	1	2
69	3	3	1	4
70	1	1	3	4
71	4	3	1	1
72	2	2	3	3
73	4	4	1	2
74	4	2	3	3
75	1	2	4	1
76	4	3	4	2
77	3	3	4	2
78	1	1	2	3
79	1	3	4	3
80	3	1	4	1
81	1	3	1	3
82	3	1	2	3
83	1	1	2	1
84	3	4	4	2
85	4	4	1	4
86	4	4	1	2
87	4	3	3	4
88	2	3	1	1
89 90	4	2	4	4
	4	2	3	2
91 92	3	1	1	3
92	1	3	3	1
93	3	1	2	1
95	4	3	4	4
	1	4	4	4
96	2	4	1	4
97	1	4	1	3
98	1	2	4	3
99	3	4	4	2

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Total No. of Printed Pages: 21

## (DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

С

### PG-EE-2021

SET-X

**SUBJECT: Life Sciences** 

12491

	*• ·	51. 140.
Time: 11/4 Hours	Max. Marks: 100	Total Questions: 100
Roll No. (in figures)	(in words)	
Name	Date	e of Birth
Father's Name	Mother's Name	
Date of Examination		
(Signature of the Candidate)		(Signature of the Invigilator)

## CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates *must return* the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means/mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

1.	The C 4 plants are photosynthetically more efficient than C 3 plants because :
	(1) They have more chloroplasts
	(2) The CO <sub>2</sub> compensation point is more
	(3) CO <sub>2</sub> generated during photorespiration is trapped and recycled through PEP carboxylase
	(4) The CO <sub>2</sub> efflux is not prevented
2.	The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by:
	(1) T.H. Morgan
	(2) Gregor J. Mendel
	(3) Alfred Sturtevant
	(4) Sutton Boveri
3.	What is the genetic disorder in which an individual has an overall masculine development gynaecomastia, and is sterile?
	(1) Turner's syndrome (2) Klinefelter's syndrome
	(3) Edward syndrome (4) Down's syndrome
4.	A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by :
	(1) Only daughters (2) Only sons
	(3) Both sons and daughters (4) Only grandchildren
5.	Which one of the following discoveries resulted in a Nobel Prize?
	(1) X-rays induce sex-linked recessive lethal mutations
	(2) Cytoplasmic inheritance
	(3) Recombination of linked genes
	(4) Genetic engineering

6	Normally DNA molecule has A-T, G-C pairing. However, these bases can exist in alternative valency status owing to rearrangements called:		
	(1) Frame-shift mutation	(2) Tautomerisational mutation	
	(3) Analog substitution	(4) Point mutation	
7.	The most striking example of poi	nt mutation is found in a disease called:	
	(1) Down's syndrome	(2) Sickle cell anaemia	
	(3) Edward syndrome	(4) Night blindness	
8.	When two genetic loci produce i considered to be:	dentical phenotypes in cis and trans position, they are	
	(1) Multiple alleles		
	(2) The parts of same gene		
	(3) Pseudoalleles		
	(4) Different genes		
9.	What map unit (Centimorgan) is a	dopted in the construction of genetic maps?	
	(1) A unit of distance between two expressed genes representing 10% cross over		
	(2) A unit of distance between two expressed genes representing 100% cross over		
	(3) A unit of distance between genes an chromosomes, representing 1 % cross over		
		nes on chromosomes, representing 50% cross over	
10.	Expressed Sequence Tags (ESTS)	refers to:	
	(1) Genes expressed as RNA	(2) Polypeptide expression	
	(3) DNA polymorphism	(4) Novel DNA sequences	
11.	Select one of the following of im and Pinus and showing affinities w	portant features distinguishing Gnetum from Cycas ith angiosperms:	
	(1) Embryo development and apical meristem		
	(2) Absence of resin duct and leaf	venation	
	(3) Presence of vessel elements an	d absence of archegonia	
	(4) Perianth and two integuments		
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12.	Which one of the following is heterosporous?						
	(1) Equisetum						
	(2) Dryopteris						
	(3) Salvinia						
	(4) Adiantum						
13.	A system of classification, in which a large number of traits are considered, is:						
	(1) Natural system						
	(2) Phylogenetic system						
	(3) Artificial system						
	(4) Synthetic system						
1/1	The book 'Genera plantarum' was written by:						
17.							
	(3) Bessey (4) Hutchinson						
15.	Phylogenetic classification is one which is based on:						
	(1) Overall similarities (2) Utilitarian system						
	(3) Habits of plants (4) Common evolutionary descent						
16.	Endosperm of gymnosperm is ontogenetically similar to angiospermic:						
	(1) Endosperm (2) Embryo sac						
	(3) Archegonium (4) Megasporangia						
17.	Flowering plants are more successful than other members of the plant world because:						
	(1) They are large and have a good vascular tissue system						
	(2) They carry out variety of pollination mechanism						
	(3) The protected plant embryo can survive in the period of unfavourable conditions						
	(4) All of these						
G-E	E-2021/(Life Sciences)(SET-X)/(C) P. T. O.						
	13. 14. 15.						

18.	A.	. Heterospory is found in all members of	pteropsida:					
	B.	B. Selaginella is advance among pteridophytes as it produces seeds						
	C.	Pinus leaves are monomorphic, pinna adaptation against transpiration	te compound and have sunken stomata a					
	D.	Sporic meiosis is characteristic of line Chlamydomonas and Ulothrix.	fe cycle in many organisms like Volvox					
	(1)	) All are incorrect (2	) Both B and C are correct					
	(3)	) Only B is correct (4	) Only D is incorrect					
19.	Wł	Thich phytohormone is synthesised in ripe	ned fruits?					
	(1)	) ABA (2	) Auxin					
	(3)	) Cytokinin (4	) Ethylene					
20.	Wł	Thich of the following is incorrect about et	hylene?					
	(1)	) Promotes root hair formation	,					
	(2)	2) It is natural and derivative of carotenoid	ls					
	(3)	) It increases the number of female flower	rs					
	(4)	) It causes synchronisation of flowering a	and fruit set in pineapples					
21.		Il the following may be methods for the i	nhibition of microbial growth by antibiotics					
	(1) Antibiotics disrupt cell wall synthesis.							
	(2)	2) Antibiotics interfere with cell membran	e function.					
	(3)	3) Antibiotics prevent the release of energ	y from ATP.					
	(4)	4) Antibiotics inhibit the synthesis of proto	ein.					
22.		n which of the following would you placeeds?	e the plants having vascular tissue lacking					
4	(1,	1) Pteridophytes						
	(2	2) Gymnosperms						

(3) Bryophytes

(4) Algae

23.	Apomixis is a type of reproduction in pl	ants in which?	
	(1) Fertilization does not take place.		
	(2) Male nucleus takes part in fertilizati	on.	
	(3) Embryo formation does not take pla	ice.	
	(4) Generative nucleus takes part in ferr	tilization.	
24.	From which of the following algae, again	r is commercially extracted?	
	(A) Gracillaria		
	(B) Fucus		
	(C) Sargassum		
	(D) Gelidium		.*
	(E) Turbinaria		
	(1) C and E		
	(2) B and C		•
	(3) D and E		
	(4) A and D		
25.	In which one of the following pairs mosquitoes?	of diseases is viral as well as transmitte	ed by
	(1) Elephantiasis and dengue		
	(2) Yellow fever and sleeping sickness	<b>,</b>	
	(3) Encephalitis and sleeping sickness		
	(4) Yellow fever and dengue		
26.	A free living nitrogen-fixing cyanobact with the water fern Azolla is:	erium which can also form symbiotic association	ciation
	(1) Tolypothrix	(2) Nostoc	
	(3) Chlorella	(4) Anabaena	
PG-E	E-2021/(Life Sciences)(SET-X)/(C)		P. T. O.

#### 27. Ionophores are:

- (1) the gating mechanisms associated with the transport of ions.
- (2) intrinsic proteins that passively transport ions.
- (3) chemicals that form pores in the plasma membrane and allow ions to cros.
- (4) intrinsic proteins that actively transport ions.

#### **28.** The trans Golgi network is:

- (1) the intermediate compartment between the ER and the Golgi.
- (2) the part of the Golgi where fusion of vesicles from the ER occurs.
- (3) where sorting of proteins to the lysosomes, plasma membrane and cell exterior occurs.
- (4) the network of vesicles that transport proteins between Golgi cisternae.
- 29. Most human cells are diploid with total DNA content of 2C. The DNA content increases to 4C before the onset of mitosis. At anaphase, the DNA content of each cluster will be:
  - (1) 4C
  - (2) 2C
  - (3) 1C
  - (4) 3C
- 30. Malignant cancer cells have all of the following properties except:
  - (1) unregulated cell division
  - (2) inhibition of angiogenesis
  - (3) resistance to apoptosis
  - (4) cellular immortality

- 31. Which one of the following organisms is scientifically correctly named, correctly Printed according to the International Rules of Nomenclature and correctly described?
  - (1) E.coli Full name Entamoeba coli, a commonly occurring bacterium in human intestine
  - (2) Musca domestica The common house lizard, a reptile
  - (3) Plasmodium falciparum A protozoan pathogen causing the most serious type of malaria
  - (4) Felis tigris The Indian tiger, well protected in Gir forests
- **32.** What is true for mammalia?
  - (1) Platypus is oviparous

- (2) Bats have feathers
- (3) Elephant is ovoviviparous
- (4) Diaphragm is absent in them
- 33. Which of the following character is present in all chordates?
  - (1) Diaphragm
  - (2) Vertebral column
  - (3) Pharyngeal gill clefts
  - (4) Dorsal solid nerve cord
- 34. In which of the following animal post anal tail is found?
  - (1) Earthworm
  - (2) Lower invertebrate
  - (3) Scorpion
  - (4) Snake
- 35. In which of the following notochord is present in embryonic stage?
  - (1) All chordate
  - (2) Some chordates
  - (3) Vertebrates
  - (4) Non chordates

- 36. Given below are four matches of an animal and its kind of respiratory organ:
  - A. Silver fish Trachea
  - B. Scorpion Book lung
  - C. Sea squirt Pharyngeal gills
  - D. Dolphin Skin

The correct matches are

- (1) A and B
- (2) A, B and C
- (3) B and D
- (4) C and D
- **37.** Which one of the following phyla is correctly matched with its two general characteristics?
  - (1) Mollusca Normally oviparous and development through a trochophore or veliger larva
  - (2) Arthropoda Body divided into head, thorax and abdomen and respiration by tracheae
  - (3) Chordata Notochord at some stage and separate anal and urinary openings to the outside
  - (4) Echinodermata Pentamerous radial symmetry and mostly internal fertilization
- 38. Which of the following are referred as non-vertebrate chordates?
  - (1) Ciona, Ascidia, Amphioxus
  - (2) Lamprey, Myxine, Shark
  - (3) Scoliodon, Torpedo, Trygon
  - (4) Pristis, Branchiostoma, Scyllium doutorostomes?

39.	Lateral line sense organs are absent in:
	(1) Tadpole larva of frog
	(2) Bony fishes
	(3) Reptiles
	(4) Cartilaginous fishes
40.	The termination of gastrulation is indicated by:
٠	(1) closure of neural tube
	(2) closure of blastopore
	(3) obliteration of archenteron
	(4) obliteration of blastocoel
41.	The tendency of population to remain in genetic equilibrium may be disturbed by:
	(1) Lack of migration (2) Lack of mutations
	(3) Lack of random mating (4) Random mating
42.	The two antibiotic resistance genes on vector pBR322 are for:
	(1) Tetracycline and Kanamycin
	(2) Ampicillin and Tetracycline
	(3) Ampicillin and Chloramphenicol
	(4) Chloramphenicol and Tetracycline
43.	Which one of the following equipments is essentially required for growing microbes on
	a large scale, for industrial production of enzymes?
	(1) BOD incubator (2) Sludge digester
	(3) Industrial oven (4) Bioreactor
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4	<b>4.</b> DNA precipitation out of a mixture of biomolecules can be achieved by treatment with:
	(1) Isopropanol
	(2) Chilled ethanol
	(3) Methanol at room temperature
	(4) Chilled chloroform
45	Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the incorrect statement.
	(1) The enzyme cuts DNA molecule at identified position within the DNA.
	(2) The enzyme binds DNA at specific sites and cuts only one of the two strands.
	(3) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand.
	(4) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA.
46.	
	(1) Extension, Denaturation, Annealing
	(2) Annealing, Extension, Denaturation
	(3) Denaturation, Annealing, Extension
	(4) Denaturation, Extension, Annealing
47.	Enzyme used in ELISA test is:
	(1) Endonuclease
	(2) Ligase
	(3) Peroxidase
	(4) Polymerase
48.	What will be the pCO <sub>2</sub> and pO <sub>2</sub> in atmospheric air as compared to alveoli respectively?
	(1) Low and high (2) High and low

(4) Low and low

(3) High and high

- 49. In ureotelic animals, urea is formed by:
  - (1) Kreb's cycle
  - (2) EM pathway
  - (3) Ornithine cycle
  - (4) Cori's cycle
- **50.** Which one of the following mammalian cells is not capable of metabolising glucose to carbon-dioxide aerobically?
  - (1) Red blood cells
  - (2) White blood cells
  - (3) Unstriated muscle cells
  - (4) Liver cells
- 51. Select a correct match:
  - (1) GA, Early seed production in conifers
  - (2) Cytokinin Synchronise fruit set in pineapples
  - (3) Auxin Overcomes senescence
  - (4) Ethylene Seed maturation and development
- 52. Where is the respiratory electron transport system (ETS) located in plants?
  - (1) Intermembrane space
  - (2) Mitochondrial matrix
  - (3) Outer mitochondrial membrane
  - (4) Inner mitochondrial membrane
- 53. Respiratory Quotient (RQ) value of tripalmitin is:
  - (1) 0.9
  - (2) 0.7
  - (3) 0.07
  - (4) 0.09

5	64. Conversion of glucose to glucose glycolysis, is catalyzed by:	e-6-phosphate,	the first	irreversible	reaction	on o
-	(1) Aldolase					
	(2) Hexokinase					
	(3) Enolase			٠.		
	(4) Phosphofructokinase		•			
5	5. How many ATP molecules will be prolecule of glucose?	produced in m	nuscles by a	aerobic oxi	dation o	f one
*	(1) 2	(2) 4	•	v.		
	(3) 36	(4) 34				
56	6. Plants, but not animals, can convert fa	atty acids to su	igars by a se	eries of reac	tions ca	lled :
	(1) Photosynt				1	
	(2) Krebs cycle				t	
	(3) Glycolysis					
	(4) Glyoxylate cycle					
57.	Pasteurization is a process, which me temperature and for how much duration		of drinks. I	t is carried	out, at	wha
	(1) 70°C and 60 minutes					
	(2) 80°C and 30 minutes					
	(3) 120°C and 60 minutes					
•	(4) 60-70°C and 30 minutes	,				
58.	Lenticels are involved in:		•			
	(1) Gaseous exchange	(2) Food 7	ransport			
	(3) Photosynthesis	(4) Transp	• :	•	· ·	
59.	Guttation is the result of:	(O) D				
	(1) Osmosis	• • • • • • • • • • • • • • • • • • • •	ressure			
	(3) Diffusion	(4) Transp	iration		*	
PG-EE	-2021/(Life Sciences)(SET-X)/(C)					· , ·

60.	Photosynthetic Active Radiation (PAR) has the following range of wavelengths:
	(1) 400-700 nm
	(2) 450-950 nm
	(3) 340-450 nm
	(4) 500-600 nm
61.	All enzymes are proteins except :
	(1) Trypsin
	(2) Pepsin
	(3) Steapsin
	(4) Ribozyme and Ribonuclease-P
62.	Which of the following is the best evidence for the lock and key theory of enzyme action?
	(1) All isolated enzymes have been identified as protein
	(2) Compounds similar in structure to the substrate inhibit the reaction
	(3) Enzymes are found in living organisms and speed up certain reaction
	(4) Enzymes determine the direction of a reaction
63.	Co-enzyme is:
	(1) Always a protein
	(2) Often a metal
	(3) Always an inorganic compound
	(4) Often a vitamin
64.	A person is eating boiled potato. His food contains:
	(1) Cellulose, which can be digested by cellulase

- (2) Starch, which cannot be digested
- (3) Lactose, which cannot be digested
- (4) DNA, which can be digested by pancreatic DNAase

	•	
6	5. Which of the following is a reducing sugar?	
	(1) Galactose	
	(2) Gluconic acid	
	(3) B-methyl galactoside	
	(4) Sucrose	
66	Which of the following hormones is not secreted by duodenum to motility?	inhibit the gastric
	(1) GIP	
	(2) Enterogastrone	
	(3) Secretin	
	(4) Enterokinase	
67.	In case of vertebrates, lacteals are found in:	
	(1) Oesophagus	
	(2) Ear	
	(3) Small intestine	
	(4) Ischium	
68.	The movement of ions against the concentration gradient will be:	
00.	(1) Active transport	
	(2) Osmosis	
	(3) Diffusion	
	(4) All of these	
69.	Vomiting centre is located in the:	
03.	(1) Medulla oblongata	
	(2) Stomach and sometimes in duodenum	
	(3) GI tract	
	(4) Hypothalamus	
	-2021/(Life Sciences)(SET-X)/(C)	
PG-EE.	-LUMAI (MARCHANIA)	

70. Which one of the following vitamins can be synthesised by bacteria inside the g						
	(1) D (2) A					
	(3) $B_1$ (4) $C$					
71.	Which one of the following is a protein deficiency disease?					
	(1) Kwashiorkor					
	(2) Night blindness					
	(3) Eczema					
	(4) Cirrhosis					
72.	Which of the following statement is incorrect wrt inbreeding?					
	(1) Inbreeding increases homozygosity					
	(2) Inbreeding exposes harmful recessive gene that are eliminated by selection					
	(3) Inbreeding helps in accumulation of deleterious alleles and elimination of desirable alleles					
	(4) Inbreeding helps in developing a pure-line animal					
73.	What is correct to say about the hormone action in humans?					
	(1) In females, FSH first binds with specific receptors on ovarian cell membrane					
	(2) FSH stimulates the secretion of estrogen and progesterone					
	(3) Glucagon is secreted by B-cells of Islets of langerhans and stimulates glycogenolysis					
	(4) Secretion of thymosins is stimulated with aging					
74	. Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristics of phylum:					
	(1) Protozoa					
	(2) Coelenterata					
	(3) Porifera					
	(4) Mollusca					

	/5.	insects on land?
		(1) Eyes
		(2) Segmentation
		(3) Bilateral symmetry
		(4) Exoskeleton
	76.	Which of the following endoparasites of humans does show viviparity?
		(1) Ascaris lumbricoides (2) Ancylostoma duodenale
	÷.	(3) Enterobius vermicularis (4) Trichinella spiralis
	77.	Select the Taxon mentioned which represents both marine and fresh water species.
		(1) Echinoderms
		(2) Ctenophora
		(3) Cephalochordata
		(4) Cnidaria
	78.	Which one of the following living organisms completely lacks a cell wall?
		(1) Cyanobacteria
		(2) Sea-fan(Gorgonia)
		(3) Saccharomyces
		(4) Blue-green algae
,	79.	Biological organisation starts with:
		(1) Cellular level
		(2) Organismic level
		(3) Atomic level
		(4) Submicroscopic molecular level
G	-EE	-2021/(Life Sciences)(SET_Y)/(C)

80.	Peripatus	is	a	connecting	link	between	:
-----	-----------	----	---	------------	------	---------	---

- (1) Coelenterata and Porifera
- (2) Ctenophora and Platyhelminthis
- (3) Mollusca and Echinodermata
- (4) Annelida and Arthropoda

## 81. Cytokines are produced by cells of the immune system in response to various physiological stimuli that:

- (1) modulate cell function through subsequent cell differentiation or cell proliferation.
- (2) facilitate cell lysis.
- (3) cause glycosylation of immunoglobulins.
- (4) cause histamine release.
- 82. In what way, if any, does the chromosomal determination of sex differ in Drosophila and humans?
  - (1) In humans, the Y-chromosome determines maleness, with female development being a default process, but in Drosophila, the presence of two X-chromosomes determines femaleness, and male development is the default process.
  - (2) In humans, the Y-chromosome determines maleness, but in Drosophila, the ratio of X-chromosomes to autosomes determines maleness or femaleness.
  - (3) In humans, it is the presence of only one X-chromosome that triggers male development and two X-chromosomes trigger female development, just as occurs in Drosophila.
  - (4) In human males, a single Y-chromosome is present in the absence of an X-chromosome, while in Drosophila, a single X-chromosome is present in the absence of a Y-chromosome.

83.	How many	generations are	present in	the seed	of	gymnosperm	?
-----	----------	-----------------	------------	----------	----	------------	---

(1) 2

(2) 3

(3) 1

(4) 4

8	4.	Bryophytes are not characterised by:		
		(1) Sporophyte parasitic over gametoph	ıyte	
		(2) Independent gametophyte		
		(3) Absence of vascular tissues		
		(4) Independent sporophyte		
8	5.	Stems and leaves of bryophytes are :		
		(1) Analogous to vascular plants	(2)	Homologous to vascular plants
		(3) Analogous to algae & fungal thallus	(4)	None of these
86	1	The dominant photosynthetic phase in the:	the	life-cycle of pteridophyta is equivalent to
		(1) Gametophytic phase of bryophyta		
		(2) Sporophytic phase of bryophyta		
		(3) Gametophytic phase of pteridophyte	:s	
		(4) Gametophytic phase of gymnospern	n	
87.		In Pteridophytes, reduction division occu	urs v	vhen :
	(	(1) Prothallus is formed	(2)	Sex organs are formed
	(	(3) Spores are formed		Gametes are formed
88.	I	n which of the following gametophyte is	s no	t independent free living?
		1) Pinus		Funaria
	(.	3) Marchantia	(4)	Pteris
39.	S	easonal activity of vascular cambium is	infl	uenced by many factors, except :
		l) Geographical location of plant		y except.
	(2	2) Relative humidity and temperature		
	(3	) Photoperiod and water supply		
		) Leaf orientation		
194	£.	병원 : 1200년 시민입니다. 전문이는 1200년 1200년 시간 1		

PG-EE-2021/(Life Sciences)(SET-X)/(C)

9	00. When secondary growth is initiated in	n dicot stem, what will happen first?			
	(1) The cells of cambium divide periclinally to form xylem mother cells				
	(2) Interfascicular cambium join with intrafascicular cambium				
	(3) Parenchymatous cells present between vascular bundles become meristematic				
	(4) Pith get obliterated				
9	1. In history of biology, human genome	project led to the development of:			
	(1) Bioinformatics				
	(2) Eugeneics				
	(3) Biotechnology				
	(4) Genetic engineering				
92		codes for a protein with 333 amino acids and the that the length of the RNA becomes 998 bases			
	(1) 1	(2) 11			
	(3) 33	(4) 333			
93.	The final proof for DNA as the genetic material came from the experiments of:				
	(1) Griffith	(2) Hershey and Chase			
	(3) Avery, Mcleod and McCarty	(4) Hargobind Khurana			
94.	Which one of the following is not a gaseous biogeochemical cycle in ecosystem?				
	(1) Nitrogen cycle	(2) Carbon cycle			
	(3) Sulphur cycle	(4) Phosphorus cycle			
95.	Which of the following ecological pyramids is generally inverted?				
	(1) Pyramid of numbers in grassland				
	(2) Pyramid of energy				
	(3) Pyramid of biomass in a forest				
	(4) Pyramid of biomass in a sea				
LFF	-2021/(Life Sciences)(SET-X)/(C)	P. T. (			

96	6. What type of ecological pyramid	would be obtained with the following data?
	Secondary consumer: 120 g	
	Primary consumer: 60g	
	Primary producer: 10 g	
	(1) Inverted pyramid of biomass	
	(2) Pyramid of energy	
	(3) Upright pyramid of biomass	
	(4) Upright pyramid of numbers	
97.	. Which ecosystem has the maximu	um biomass ?
	(1) Forest ecosystem	(2) Grassland ecosystem
	(3) Pond ecosystem	(4) Lake ecosystem
98.	Limit of BOD prescribed by Co- industrial and municipal waste wa (1) < 3.0 ppm (3) < 100 ppm	entral Pollution Control Board for the discharge of ster into natural surface water, is:  (2) < 10 ppm  (4) < 30 ppm
99.	More than 70% of world's freshwa	
	(1) Antarctica	tor is contained in :
	(2) Glaciers and Mountains	
	(3) Greenland	
	(4) Polar ice	
100.	The process by which organisms phenotypic adaptations in response (1) Convergent evolution	s with different evolutionary history evolve similar to a common environmental challenge, is called:
	(2) Non-random evolution	
	(3) Adaptive radiation	
	(4) Natural selection	
	2-2021/(Life Sciences)(SET-X)/(C)	

10:00 am	1		Subjects of Li	fe Science
Question No.	Α	В	С	D
1	3	1	1	4
2	1	2	3	2
3	1	2	2	4
4	4	4	3	4
5	4	1	1	1
6	4	1	2	4
7	3	3	2	3
8	3	1	3	1
9	2	4	3	1
10	2	3	1	3
11	1	3	3	1
12	2	1	3	3
13	2	3	1	2
14	4	4	2	4
15	1	1	4	4
16	1	2	2	1
17	3	1	4	1
18	1	1	1	4
19	4	3	4	4
20	3	4	2	1
21	3	4	3	1
22	3	2	1	4
23	1	4	1	2
24	2	4	4	2
25	4	1	4	3
26	2	4	4	4
27	4	3	3	4
28	1	1 .	3	1
29	4	1	2	2
30	2	3	2	1
31	1	1	3	1
32	4	3	1	2
33	2	2	3	2
34	2	4	4	4
35	3	4	1	1
36	4	1	2	1
37	4	1	1	3
38	1	4	1	1
39	2	4	3	4
40	1	1	4	3
41	1	1	3	3
42	3	4	2	1
43	2	2	4	3
44	3	2	2	4
45	1	3	2	1
46	2	4	3	2
47	2	4	3	1
48	3	1	1	1
49	3	2	3	3
50	1	1	1	4

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Entrance Exa 10:00 am		Su	bjects of Life	Sciences
Question No.	Α	В В	C	D
51	1	3	1	3
52	3	3	4	2
53	2	1	2	4
54	4	2	2	2
55	4	4	3	2
56	1	2	4	3
57	1	4	4	3
58	4		-	<del> </del>
59		1	1	1
60	4	4	2	3
61	1	2	1	1
62	3	1	4	1
	2	3	2	3
63 64	4	2	4	1
65	2	3	4	3
66	2	1	1	4
67	3	2	4	4
68		2	3	4
69	1	3	1	2
70	3	3	1	4
71	1 4	1	3	4
72	2	2	3	3
73	4	4	1	2
74	4	2	3	3
75	1	2	4	1
76	4	3	4	2
77	3	3	4	2
78	1	1	2	3
79	1	3	4	3
80	3	1	4	1
81	1	3	1	3
82	3	1	2	3
83	1	1	2	1
84	3	4	4	2
85	4	4	1	4
86	4	4	1	2
87	4	3	3	4
88	2	3	1	1
89	4	2	4	4
90	4	2	3	2
91	3	1	1	3
92	1	3	3	1
93	3	1	2	1
94	4	3	4	4
95	1	4	4	4
96	2	4	1	4
97	1	4	1	3
98	1	2	4	3
99	3	4	4	2
100	4	4	1	2

Page 2 of 2

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Total No. of Printed Pages: 21

### (DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU

# D

## ARE ASKED TO DO SO) PG-EE-2021

SET-X

**SUBJECT: Life Sciences** 

12492

		Sr. No
Time: 11/4 Hours	Max. Marks : 100	Total Questions: 100
Roll No. (in figures)	(in words)	
Name		of Birth
Father's Name		
Date of Examination		
(Signature of the Candidate)		(Signature of the Invigilator)
CANDIDATES MUST READ TH	E FOLLOWING INFORMATION	WINCTELLOTIONS DESCRIP

## CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates *must return* the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means/mis-behaviour will be registered against him/her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

PG-EE-2021/(Life Sciences)(SET-X)/(D)

SEAL

- 1. All enzymes are proteins except:
  - (1) Trypsin
  - (2) Pepsin
  - (3) Steapsin
  - (4) Ribozyme and Ribonuclease-P
- 2. Which of the following is the best evidence for the lock and key theory of enzyme action?
  - (1) All isolated enzymes have been identified as protein
  - (2) Compounds similar in structure to the substrate inhibit the reaction
  - (3) Enzymes are found in living organisms and speed up certain reaction
  - (4) Enzymes determine the direction of a reaction
- **3.** Co-enzyme is:
  - (1) Always a protein
  - (2) Often a metal
  - (3) Always an inorganic compound
  - (4) Often a vitamin
- **4.** A person is eating boiled potato. His food contains :
  - (1) Cellulose, which can be digested by cellulase
  - (2) Starch, which cannot be digested
  - (3) Lactose, which cannot be digested
  - (4) DNA, which can be digested by pancreatic DNAase
- **5.** Which of the following is a reducing sugar?
  - (1) Galactose
  - (2) Gluconic acid
  - (3) B-methyl galactoside
  - (4) Sucrose

6.	Which of the following hormones is not secre motility?	eted by duodenum to inhibit the	gastri	
	(1) GIP			
	(2) Enterogastrone			
	(3) Secretin			
	(4) Enterokinase			
7.	In case of vertebrates, lacteals are found in:			
	(1) Oesophagus			
	(2) Ear			
	(3) Small intestine			
	(4) Ischium			
8.	The movement of ions against the concentration gradient will be:			
	(1) Active transport			
	(2) Osmosis	,		
	(3) Diffusion			
	(4) All of these			
9.	Vomiting centre is located in the :			
	(1) Medulla oblongata			
	(2) Stomach and sometimes in duodenum			
	(3) GI tract			
	(4) Hypothalamus			
10.	. Which one of the following vitamins can be s	ynthesised by bacteria inside the	aut 2	
	(1) D (2)		gut ;	
	(3) $B_1$ (4)			
PG-EF	EE-2021/(Life Sciences)(SET-X)/(D)			

11.	In history of biology, human genome pro	oject led to the development of:
	(1) Bioinformatics	
	(2) Eugeneics	
	(3) Biotechnology	
	(4) Genetic engineering	
12.		odes for a protein with 333 amino acids and the at the length of the RNA becomes 998 bases,
	(1) 1	(2) 11
	(3) 33	(4) 333
13.	The final proof for DNA as the genetic i	material came from the experiments of:
	(1) Griffith	
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	(4) Hargobind Khurana	
14.	Which one of the following is not a gase	eous biogeochemical cycle in ecosystem?
	(1) Nitrogen cycle	(2) Carbon cycle
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15.	Which of the following ecological pyran	mids is generally inverted?
	(1) Pyramid of numbers in grassland	
	(2) Pyramid of energy	
ū	(3) Pyramid of biomass in a forest	
	(4) Pyramid of biomass in a sea	

16.	What type of ecological pyramid would be	e obtained with the following data?
	Secondary consumer: 120 g	
	Primary consumer : 60g	
	Primary producer: 10 g	
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	(2) Pyramid of energy	
	(3) Upright pyramid of biomass	
	(4) Upright pyramid of numbers	
17.	Which ecosystem has the maximum bio	mass?
	(1) Forest ecosystem	(2) Grassland ecosystem
	(3) Pond ecosystem	(4) Lake ecosystem
18.	Limit of BOD prescribed by Central industrial and municipal waste water in	Pollution Control Board for the discharge of to natural surface water, is:
	(1) < 3.0  ppm	(2) < 10  ppm
	(3) < 100 ppm	(4) < 30  ppm
19.	More than 70% of world's freshwater is	contained in :
	(1) Antarctica	

- (2) Glaciers and Mountains
- (3) Greenland
- (4) Polar ice
- 20. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called:
  - (1) Convergent evolution
  - (2) Non-random evolution
  - (3) Adaptive radiation
  - (4) Natural selection

			5
21	Select a correct match:		
	(1) GA, – Early seed prod	uction in conifers	
	(2) Cytokinin – Synchroni	se fruit set in pineapples	
	(3) Auxin – Overcomes se	enescence	
	(4) Ethylene – Seed matur	ation and development	
22.	Where is the respiratory ele	ectron transport system (I	ETS) located in plants ?
	(1) Intermembrane space		
	(2) Mitochondrial matrix		
	(3) Outer mitochondrial me	embrane	
	(4) Inner mitochondrial me	embrane	
23.	Respiratory Quotient (RQ)	value of tripalmitin is:	
	(1) 0.9		
	(2) 0.7		
	(3) 0.07		
	(4) 0.09		
24.	Conversion of glucose to glycolysis, is catalyzed by:	glucose-6-phosphate,	the first irreversible reaction of
	(1) Aldolase		
	(2) Hexokinase		
	(3) Enolase		
	(4) Phosphofructokinase		
25.	How many ATP molecules molecule of glucose?	will be produced in mu	ascles by aerobic oxidation of one
	(1) 2	(2) 4	
	(3) 36	(4) 34	
PG-EE	-2021/(Life Sciences)(SET-	X)/(D)	P. T. O

Plants, but not animals, can convert fa	atty acids to sugars by a series of reactions called:
(1) Photosynt	(2) Krebs cycle
(3) Glycolysis	(4) Glyoxylate cycle
	neans heating of drinks. It is carried out, at what on?
(1) 70°C and 60 minutes	
(2) 80°C and 30 minutes	
(3) 120°C and 60 minutes	
(4) 60-70°C and 30 minutes	
Lenticels are involved in:	
(1) Gaseous exchange	(2) Food Transport
(3) Photosynthesis	(4) Transpiration
Guttation is the result of:	
(1) Osmosis	(2) Root pressure
(3) Diffusion	(4) Transpiration
Photosynthetic Active Radiation (PA	R) has the following range of wavelengths:
(1) 400-700 nm	, wavelenging .
(2) 450-950 nm	
(3) 340-450 nm	
(4) 500-600 nm	
Cytokines are produced by cells physiological stimuli that:	of the immune system in response to various
(1) modulate cell function through s	ubsequent cell differentiation or cell proliferation.
(2) facilitate cell lysis.	promeration.
(3) cause glycosylation of immunog	lobulins.
(4) cause histamine release.	
C-2021/(Life Sciences)(SET-X)/(D)	
	(1) Photosynt (3) Glycolysis  Pasteurization is a process, which make temperature and for how much duration (1) 70°C and 60 minutes (2) 80°C and 30 minutes (3) 120°C and 60 minutes (4) 60-70°C and 30 minutes  Lenticels are involved in: (1) Gaseous exchange (3) Photosynthesis  Guttation is the result of: (1) Osmosis (3) Diffusion  Photosynthetic Active Radiation (PAC) (1) 400-700 nm (2) 450-950 nm (3) 340-450 nm (4) 500-600 nm  Cytokines are produced by cells physiological stimuli that: (1) modulate cell function through s (2) facilitate cell lysis. (3) cause glycosylation of immunogeness

- **32.** In what way, if any, does the chromosomal determination of sex differ in Drosophila and humans?
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  - (4) In human males, a single Y-chromosome is present in the absence of an X-chromosome, while in Drosophila, a single X-chromosome is present in the absence of a Y-chromosome.
- **33.** How many generations are present in the seed of gymnosperm?

(1) 2

(2) 3

(3) 1

(4) 4

- **34.** Bryophytes are *not* characterised by :
  - (1) Sporophyte parasitic over gametophyte
  - (2) Independent gametophyte
  - (3) Absence of vascular tissues
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- **35.** Stems and leaves of bryophytes are :
  - (1) Analogous to vascular plants
  - (2) Homologous to vascular plants
  - (3) Analogous to algae & fungal thallus
  - (4) None of these

- **36.** The dominant photosynthetic phase in the life-cycle of pteridophyta is equivalent to the :
  - (1) Gametophytic phase of bryophyta
  - (2) Sporophytic phase of bryophyta
  - (3) Gametophytic phase of pteridophytes
  - (4) Gametophytic phase of gymnosperm
- **37.** In Pteridophytes, reduction division occurs when :
  - (1) Prothallus is formed
  - (2) Sex organs are formed
  - (3) Spores are formed
  - (4) Gametes are formed
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  - (1) Pinus
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  - (3) Marchantia
  - (4) Pteris
- 39. Seasonal activity of vascular cambium is influenced by many factors, except:
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  - (2) Relative humidity and temperature
  - (3) Photoperiod and water supply
  - (4) Leaf orientation
- 40. When secondary growth is initiated in dicot stem, what will happen first?
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  - (2) Interfascicular cambium join with intrafascicular cambium
  - (3) Parenchymatous cells present between vascular bundles become meristematic
  - (4) Pith get obliterated

- **41.** Which one of the following organisms is scientifically correctly named, correctly Printed according to the International Rules of Nomenclature and correctly described?
  - (1) E.coli Full name Entamoeba coli, a commonly occuring bacterium in human intestine
  - (2) Musca domestica The common house lizard, a reptile
  - (3) Plasmodium falciparum A protozoan pathogen causing the most serious type of malaria
  - (4) Felis tigris The Indian tiger, well protected in Gir forests
- **42.** What is true for mammalia?
  - (1) Platypus is oviparous

- (2) Bats have feathers
- (3) Elephant is ovoviviparous
- (4) Diaphragm is absent in them
- **43.** Which of the following character is present in all chordates?
  - (1) Diaphragm
  - (2) Vertebral column
  - (3) Pharyngeal gill clefts
  - (4) Dorsal solid nerve cord
- 44. In which of the following animal post anal tail is found?
  - (1) Earthworm
  - (2) Lower invertebrate
  - (3) Scorpion
  - (4) Snake
- 45. In which of the following notochord is present in embryonic stage?
  - (1) All chordate
  - (2) Some chordates
  - (3) Vertebrates
  - (4) Non chordates

- 46. Given below are four matches of an animal and its kind of respiratory organ:
  - A. Silver fish Trachea
  - B. Scorpion Book lung
  - C. Sea squirt Pharyngeal gills
  - D. Dolphin Skin

The correct matches are

- (1) A and B
- (2) A, B and C
- (3) B and D
- (4) C and D
- **47.** Which one of the following phyla is correctly matched with its two general characteristics?
  - (1) Mollusca Normally oviparous and development through a trochophore or veliger larva
  - (2) Arthropoda Body divided into head, thorax and abdomen and respiration by tracheae
  - (3) Chordata Notochord at some stage and separate anal and urinary openings to the outside
  - (4) Echinodermata Pentamerous radial symmetry and mostly internal fertilization
- **48.** Which of the following are referred as non-vertebrate chordates?
  - (1) Ciona, Ascidia, Amphioxus
  - (2) Lamprey, Myxine, Shark
  - (3) Scoliodon, Torpedo, Trygon
  - (4) Pristis, Branchiostoma, Scyllium doutorostomes?

P. T. O.

49.	Lateral line sense organs are absent in:	
	(1) Tadpole larva of frog	(2) Bony fishes
-	(3) Reptiles	(4) Cartilaginous fishes
50.	The termination of gastrulation is indica	nted by:
	(1) closure of neural tube	(2) closure of blastopore
	(3) obliteration of archenteron	(4) obliteration of blastocoel
51.	The tendency of population to remain ir	genetic equilibrium may be disturbed by:
	(1) Lack of migration	(2) Lack of mutations
	(3) Lack of random mating	(4) Random mating
<b>52</b> .	The two antibiotic resistance genes on v	vector pBR322 are for:
	(1) Tetracycline and Kanamycin	
	(2) Ampicillin and Tetracycline	
•	(3) - Ampicillin and Chloramphenicol	
	(4) Chloramphenicol and Tetracycline	
53.	Which one of the following equipments a large scale, for industrial production o	is essentially required for growing microbes on f enzymes?
	(1) BOD incubator	(2) Sludge digester
	(3) Industrial oven	(4) Bioreactor
54.	DNA precipitation out of a mixture of with:	of biomolecules can be achieved by treatment
	(1) Isopropanol	
	(2) Chilled ethanol	
	(3) Methanol at room temperature	
	(4) Chilled chloroform	

55.	Following	statements	describe	the	characteristics	of	the	enzyme	Restriction
		ase. Identify							
								. DNIA	

- (1) The enzyme cuts DNA molecule at identified position within the DNA.
- (2) The enzyme binds DNA at specific sites and cuts only one of the two strands.
- (3) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand.
- (4) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA.
- **56.** The correct order of steps in Polymerase Chain Reaction (PCR) is:
  - (1) Extension, Denaturation, Annealing
  - (2) Annealing, Extension, Denaturation
  - (3) Denaturation, Annealing, Extension
  - (4) Denaturation, Extension, Annealing
- **57.** Enzyme used in ELISA test is:
  - (1) Endonuclease
  - (2) Ligase
  - (3) Peroxidase
  - (4) Polymerase
- **58.** What will be the pCO<sub>2</sub> and pO<sub>2</sub> in atmospheric air as compared to alveoli respectively?
  - (1) Low and high

(2) High and low

(3) High and high

- (4) Low and low
- **59.** In ureotelic animals, urea is formed by:
  - (1) Kreb's cycle
  - (2) EM pathway
  - (3) Ornithine cycle
  - (4) Cori's cycle

- 60. Which one of the following mammalian cells is not capable of metabolising glucose to carbon-dioxide aerobically?
  (1) Red blood cells
  (2) White blood cells
  (3) Unstriated muscle cells
  - (4) Liver cells
- **61.** Which one of the following is a protein deficiency disease?
  - (1) Kwashiorkor
  - (2) Night blindness
  - (3) Eczema
  - (4) Cirrhosis
- **62.** Which of the following statement is incorrect wrt inbreeding?
  - (1) Inbreeding increases homozygosity
  - (2) Inbreeding exposes harmful recessive gene that are eliminated by selection
  - (3) Inbreeding helps in accumulation of deleterious alleles and elimination of desirable alleles
  - (4) Inbreeding helps in developing a pure-line animal
- **63.** What is correct to say about the hormone action in humans?
  - (1) In females, FSH first binds with specific receptors on ovarian cell membrane
  - (2) FSH stimulates the secretion of estrogen and progesterone
  - (3) Glucagon is secreted by B-cells of Islets of langerhans and stimulates glycogenolysis
  - (4) Secretion of thymosins is stimulated with aging

14	at ing flagellated
64.	Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristics of phylum:
	(1) Protozoa
	(2) Coelenterata
	(3) Porifera
	(4) Mollusca
65.	Which of the following characteristics is mainly responsible for diversification of insects on land?
	(1) Eyes
	(2) Segmentation
	(3) Bilateral symmetry
	(4) Exoskeleton
66.	Which of the following endoparasites of humans does show viviparity?
	(1) Ascaris lumbricoides (2) Ancylostoma duodenale
	(3) Enterobius vermicularis (4) Trichinella spiralis
67.	Select the Taxon mentioned which represents both marine and fresh water species.
	(1) Echinoderms
	(2) Ctenophora
	(3) Cephalochordata
	(4) Cnidaria
68.	Which one of the following living organisms completely lacks a cell wall?
	(1) Cyanobacteria
	(2) Sea-fan(Gorgonia)
	(3) Saccharomyces
	(4) Blue-green algae
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69.	Biological organisation starts with:	
	(1) Cellular level	
	(2) Organismic level	
	(3) Atomic level	
	(4) Submicroscopic molecular level	
70.	Peripatus is a connecting link between:	
	(1) Coelenterata and Porifera	
	(2) Ctenophora and Platyhelminthis	
	(3) Mollusca and Echinodermata	
	(4) Annelida and Arthropoda	
71.	The C 4 plants are photosynthetically more efficient than C 3 plants because:	
	(1) They have more chloroplasts	
	(2) The CO <sub>2</sub> compensation point is more	
	(3) CO <sub>2</sub> generated during photorespiration is trapped and recycled through F carboxylase	EP
	(4) The CO <sub>2</sub> efflux is not prevented	
72.	The frequency of recombination between gene pairs on the same chromosome a measure of the distance between genes was explained by:	s a
	(1) T.H. Morgan	
	(2) Gregor J. Mendel	
	(3) Alfred Sturtevant	
	(4) Sutton Boveri	
73.	What is the genetic disorder in which an individual has an overall mascudevelopment gynaecomastia, and is sterile?	ine
	(1) Turner's syndrome (2) Klinefelter's syndrome	

(4) Down's syndrome

(3) Edward syndrome

74.	A woman has an X-linked condition or can be inherited by:	one of her X chromosomes. This emoniogene	
	(1) Only daughters	(2) Only sons	
	(3) Both sons and daughters	(4) Only grandchildren	
75.	Which one of the following discoveries	resulted in a Nobel Prize?	
	(1) X-rays induce sex-linked recessive	lethal mutations	
	(2) Cytoplasmic inheritance		
	(3) Recombination of linked genes		
	(4) Genetic engineering		
76.	Normally DNA molecule has A-T, Galternative valency status owing to rear	rangements called:	
	(1) Frame-shift mutation	(2) Tautomerisational mutation	
	(3) Analog substitution	(4) Point mutation	
77.	The most striking example of point mutation is found in a disease called:		
	(1) Down's syndrome	(2) Sickle cell anaemia	
	(3) Edward syndrome	(4) Night blindness	
78.	When two genetic loci produce identic considered to be:	cal phenotypes in cis and trans position, they are	
	(1) Multiple alleles	(2) The parts of same gene	
•	(3) Pseudoalleles	(4) Different genes	
79.	What map unit (Centimorgan) is adopt	ed in the construction of genetic maps?	
	(1) A unit of distance between two ex	pressed genes representing 10% cross over	
	(2) A unit of distance between two ex	pressed genes representing 100% cross over	
	(3) A unit of distance between genes a	an chromosomes, representing 1 % cross over	
	(4) A unit of distance between genes	on chromosomes, representing 50% cross over	
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80.	Expressed Sequence Tags (ESTS) refer	s to:	
	(1) Genes expressed as RNA	(2) Polypeptide expression	
	(3) DNA polymorphism	(4) Novel DNA sequences	
81.	Select one of the following of import and Pinus and showing affinities with a	ant features distinguishing Gnetum from Cangiosperms:	ycas
	(1) Embryo development and apical m	neristem	
٠	(2) Absence of resin duct and leaf ven	ation	
	(3) Presence of vessel elements and al	osence of archegonia	
	(4) Perianth and two integuments		
82	-		
U.	<ul><li>Which one of the following is heterosp</li><li>(1) Equisetum</li></ul>	porous ?	
	· · · · · · · · · · · · · · · · · · ·	•	
	(2) Dryopteris		
	(3) Salvinia		
	(4) Adiantum		
8	3. A system of classification, in which a	large number of traits are considered, is:	
	(1) Natural system		
	(2) Phylogenetic system		
	(3) Artificial system		
	(4) Synthetic system		
	84. The book 'Genera plantarum' was wr	itten by:	
	(1) Engler & Prantl	(2) Bentham & Hooker	
	(3) Bessey	(4) Hutchinson	
	<b>85.</b> Phylogenetic classification is one wh	nich is based on:	
	(1) Overall similarities	(2) Utilitarian system	
	(3) Habits of plants	(4) Common evolutionary descent	
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86.	6. Endosperm of gymnosperm is ontoge	netically similar to angiospermic:
	(1) Endosperm	(2) Embryo sac
	(3) Archegonium	(4) Megasporangia
87.	7. Flowering plants are more successful	than other members of the plant world because:
	(1) They are large and have a good va	
	(2) They carry out variety of pollination	ion mechanism
	(3) The protected plant embryo can s	urvive in the period of unfavourable conditions
	(4) All of these	
88.	3. A. Heterospory is found in all memb	ers of pteropsida:
	B. Selaginella is advance among pter	ridophytes as it produces seeds
		pinnate compound and have sunken stomata as
	D. Sporic meiosis is characteristic Chlamydomonas and Ulothrix.	of life cycle in many organisms like Volvox
	(1) All are incorrect	(2) Both B and C are correct
	(3) Only B is correct	(4) Only D is incorrect
89.	. Which phytohormone is synthesised in	n ripened fruits ?
	(1) ABA	(2) Auxin
	(3) Cytokinin	(4) Ethylene
90.	. Which of the following is incorrect ab	out ethylene ?
	(1) Promotes root hair formation	
	(2) It is natural and derivative of caro	tenoids
	(3) It increases the number of female	flowers
	(4) It causes synchronisation of flower	ering and fruit set in pineapples

95.	(3) D and E  In which one of the following pairs of	(4) A and D of diseases is viral as well as transmitted by
	(3) D and E	(4) A and D
		(4) A - 1D
	(1) C and E	(2) B and C
	(E) Turbinaria	
	(D) Gelidium	
	(C) Sargassum	
	(B) Fucus	
	(A) Gracillaria	-
94.	From which of the following algae, again	r is commercially extracted?
	(4) Generative nucleus takes part in fer	tilization.
	(3) Embryo formation does not take pla	ace.
	(2) Male nucleus takes part in fertilizati	ion.
	(1) Fertilization does not take place.	
93.	Apomixis is a type of reproduction in pl	lants in which?
	(3) Bryophytes	(4) Algae
	(1) Pteridophytes	(2) Gymnosperms
92.	In which of the following would you seeds?	place the plants having vascular tissue lacking
	(4) Antibiotics inhibit the synthesis of p	protein.
	(3) Antibiotics prevent the release of er	
	(2) Antibiotics interfere with cell meml	brane function.
	(1) Antibiotics disrupt cell wall synthes	sis.

96.	A free living nitrogen-fixing cyanobacte with the water fern Azolla is:	rium which can also form symbiotic association					
	(1) Tolypothrix	(2) Nostoc					
	(3) Chlorella	(4) Anabaena					
97.	lonophores are :	•					
	(1) the gating mechanisms associated with the transport of ions.						
	(2) intrinsic proteins that passively tran	sport ions.					
	(3) chemicals that form pores in the plasma membrane and allow ions to cros.						
	(4) intrinsic proteins that actively transport ions.						
98.	The trans Golgi network is:						
	(1) the intermediate compartment between the ER and the Golgi.						
	(2) the part of the Golgi where fusion o						
		ysosomes, plasma membrane and cell exterior					
	(4) the network of vesicles that transpor	rt proteins between Golgi cisternae.					
99.	Most human cells are diploid with t increases to 4C before the onset of m cluster will be:	otal DNA content of 2C. The DNA content itosis. At anaphase, the DNA content of each					
	(1) 4C	(2) 2C					
	(3) 1C	(4) 3C					
100.	Malignant cancer cells have all of the fo	ollowing properties except:					
	(1) unregulated cell division						
	(2) inhibition of angiogenesis						
	(3) resistance to apoptosis						
	(4) cellular immortality						
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10:00 a			Subjects of Life Science		
Question No.		В	С	D	
1	3	1	1	4	
2	1	2	3	2	
3	1	2	2	4	
4	4	4	3	4	
<u>5</u>	4	1	1	1	
7	4	1	2	4	
8	3	3	2	3	
9	3	1	3	1	
10	2	4	3	1	
11	2	3	1	3	
12	1	3	3	1	
13	2	1	3	3	
14	2	3	1	2	
15	4	4	2	4	
16	1 1	1	4	4	
17	3	2	2	1	
18	1	1	4	1	
19	4	1	1	4	
20	3	3	4	4	
21	3	4	2	1	
22	3	2	3	1	
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24	2	4	1	2	
25	4	1	4	2	
26	2	4	4	3 4	
27	4	3	3	4	
28	1	1 .	3	1	
29	4	1	2	2	
30	2	3	2	1	
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39	2	4	3	4	
40	1	1	4	3	
41	1	1	3	3	
42	3	4	2	1	
43	2	2	4	3	
44	3	2	2	4	
45	1	3	2	1	
46	2	4	3	2	
47	2	4	3	1	
48	3	1	1	1	
49	3	2	3	3	
50	1	1	1	4	

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10:00 am		Subjects of Life Sciences			
Question No.	Α	В	c	D	
51	1	3	1	3	
52	3	3	4	2	
53	2	1	2	4	
54	4	2	2	2	
55	4	4	3	2	
56	1	2	4	3	
57	1	4	4	3	
58	4	1	1	1	
59	4	4	2	3	
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91	3	1	1	3	
92	1	3	3	1	
93	3	1	2	1	
94	4	3	4	4	
95	1	4	4	4	
96	2	4	1	4	
97	1	4	1	3	
98	1	2	4	3	
99	3	4	4	2	
100	4	4	1	2	

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