BITS, Pilani – Dubai Campus

Knowledge Village, Dubai

Comprehensive Examination - 2003/2004

1st year – Section: 1 & 3(closed Book)

Course: General Biology / BioUC111
Date: 13-01-04, Tuesday

Duration: 3 hours
Marks 100 / Weightage (40%)

Note: Attempt all parts of the questions in sequence and together.
Your answers should be brief and to the point.
Draw diagrams wherever necessary.
Full form of the biological terms to be mentioned atleast first time in your answer
Marks will be given for only fully correct objective answers.

Q 1. Identify and name the following: **(10 x 1 = 10)**

a) Rhizobium bacteria harboring in the root nodules of leguminous plant is the example of

b) "Programmed cell death" is referred to as

c) The science that explores the evolutionary relationship among organisms and establishes the evolutionary history is referred as

d) Obligatory intra cellular parasites are referred to

e) A molecule that temporarily attaches itself to an enzyme and interferes with the enzyme substrate formation is

f) A cluster of blood vessels in the kidney, surrounded by Bowman's capsule is

g) The simple sugar which constitute a building block of genetic material is

h) The orderly series of changes that begin in a previously uninhabited area and lead to a climax community is referred to as

a) Amount of energy needed to process the food we eat which is approximately 10% of your total daily kilocalories intake is

b) Which prevents the back flow of deoxygenated blood from ventricle to auricle

Q 2. Arrange them in sequence **(3 x 2 = 6)**

i) Chordates, Animalia, sapiens, Primates, Hominidae, Homo, Mammals.

ii) Pharynx, pyloric stomach, descending colon, Cardiac stomach, duodenum, small intestine, vermiform appendix, anal canal, ceacum, esophagus, ascending colon, transverse colon, sigmoid colon, rectum.

iii) Glomerulus's tubules, Bowman's capsule, Henle's loop, ascending tubules, proximal convoluted tubule, distal convoluted tubule, collecting duct, descending tubule

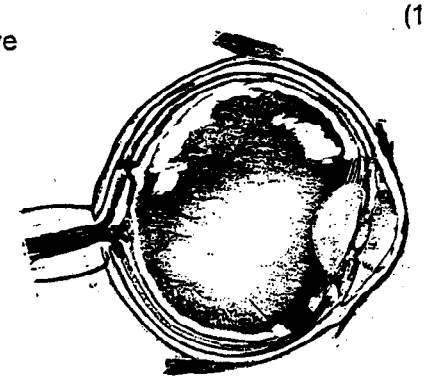
Q 3. write the full form of the following **(4 x 1 = 4)**

a) BCG b) DDT c) RDA d) ADH

P.T.O

Q 4. Draw the given diagram in your answer sheet, identify (name) them and label in your diagram **(10 x 1 = 10)**

Transparent layer through which light enters in the eye
Narrow space through which light enters the eye
Muscles, which help in the rotation of the eye
Nerve, which takes visual impulses to brain
Layer, which is purely neural and sensitive
Space between the lens and the cornea
Fluid in the biggest chamber of the eye
Area where cone density is higher
Layer, which is vascularized
Layer, which is cartilaginous.



Q 5. Solve the problem **(10 x 1 = 10)**

Male - heterozygous to nature of hair and homozygous recessive to eye colour marries a female who happens to be heterozygous to eye colour and homozygous recessive to nature of the hair. What are the possible off springs one could expect.

- Write the steps you have followed.
- In your answer mention all possible phenotypes

[In this problem curly hair & blue eyes ere considered as dominant over straight hair & brown eye]

Q 6. What are the differences between: (at least 2 relevant points to be mentioned) **(10 x 3 =30)**

a) Centrioles and centromeres
b) BMR and BMI?
c) Neuron and a nephron
d) Nucleotide and nucleoside
e) Deciduous and desert biomes
f) Prokaryotes & eukaryotes
g) Cytokinesis & karyokinesis
h) Diabetes insupidus and Diabetes mellitus
i) Food chain and food web
j) Blood and lymph

Q 7. Write the notes briefly (not more than 50 - 60 words) **(4 x 6 = 24)**

i) List four advancements that have occurred as a result of progress in biological sciences.

ii) What is syndactylism? How is it formed?

iii) State Hardy-Weinberg Equilibrium list out the conditions necessary for gene frequencies to remain constant

iv) Name hormones produced by adinohypophysis in human being (in full form) and write any two hormonal activities

v) Describe the flow of water through the hydrological cycle

vi) Elucidate the role of diaphragm and intercostals in human respiratory mechanism

Q 8. List the sequences of events that take place when DNA message is translated in to proteins. **(6)**

"All the best"

BITS, Pilani – Dubai Campus
Knowledge Village, Dubai
First Semester - 2003/2004 – Section: 1 & 3
Test - I (closed Book)

Course: General Biology / BioUC111
Date: 9.11.03, Sunday 2nd period

Duration: 50 minutes
Marks 50 / Weightage (20%)

Note: Answer all the questions briefly and to the point.
All parts of the question should be done together
Draw diagrams where ever necessary
For objective questions completely correct answers will be given marks.

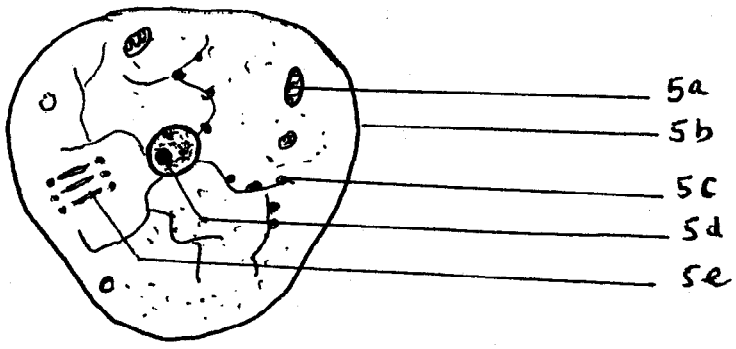
1) How Somatic cell division is different from Reduction cell division? Mention the significance of Meiosis. (5.0)

2) Explain briefly about any two environmental conditions affecting enzyme-controlled reactions. (5.0)

3) In brief elucidate the phenomenon of ***Transcription*** (5.0)

4) Construct **DNA** polymer showing its basic components.
(*Mention the full forms of the components*) (4.0)

5) Identify the organelles and mention their functions (5.0)



6) What are proteins? How are they classified based on their structural complexity. Illustrate with examples. (4.0)

7) How does the age of mother influence in trisomy births?
Illustrate with a graphical representation. (4.0)

8) Mention the phenomena of milk changing to curd. (3.0)

9) When human RBCs are placed in the hypotonic solution – What will happen? Explain with reason. (2.0)

10) How do Autotrophic and Heterotrophic organisms differ? (2.0)

11) Name any two co-enzymes (in full form) interacting in Citric acid cycle. (2.0)

PTO

Objective type of questions: (9X 1 =9)

12) Why glycolysis is otherwise called as EMP pathway

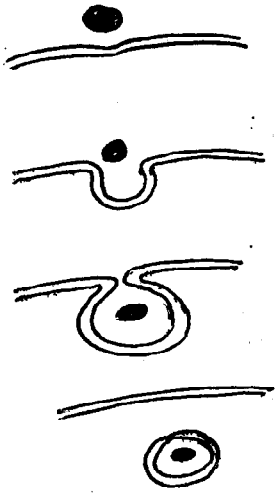
13) Complete the reaction: Sun light + 6 _____ + $6H_2O$ ⟶ _____ + $6O_2$

14) Expand the abbreviation of ***ELISA***

15) How many ATPs are gained during oxidation / reduction process of electron transport system

16) Write the scientific term for "Mad cow disease".

Identify the following:

17) 

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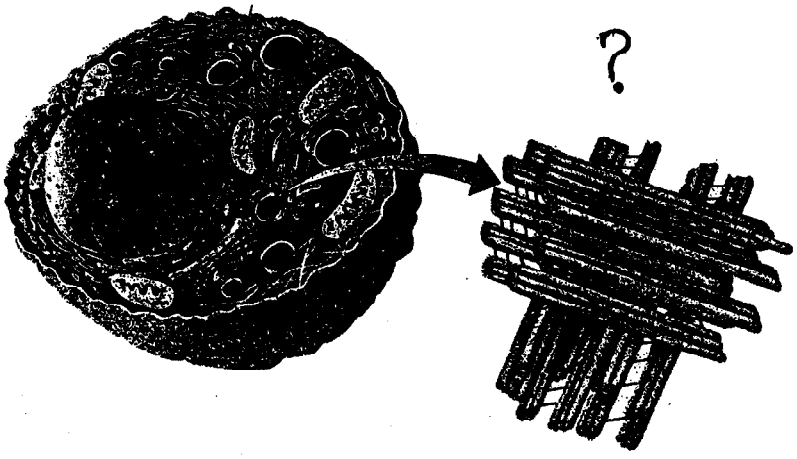
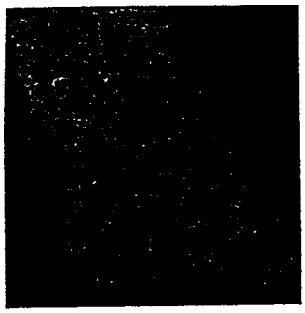
19) 

20) 

Good luck

BITS, Pilani – Dubai Campus
Knowledge Village, Dubai
First Semester - 2003/2004 – Section: 1 & 3
Test - I (closed Book)

Course: General Biology / BioUC111
Date: 9.11.03, Sunday 2nd period

Duration: 50 minutes
Marks 50 / Weightage (20%)

Note: Answer all the questions briefly and to the point.
All parts of the question should be done together
Draw diagrams where ever necessary
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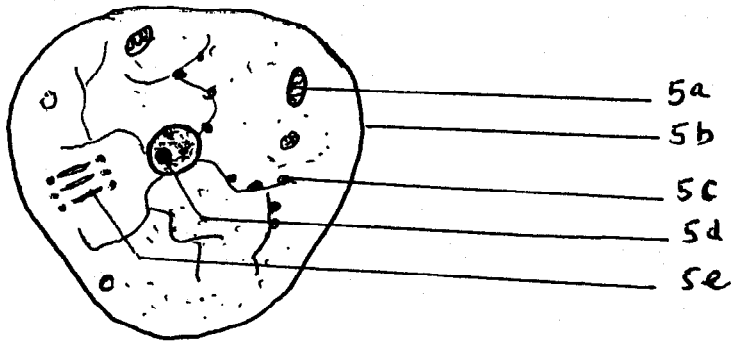

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PTO

Objective type of questions: (9 X 1 = 9)

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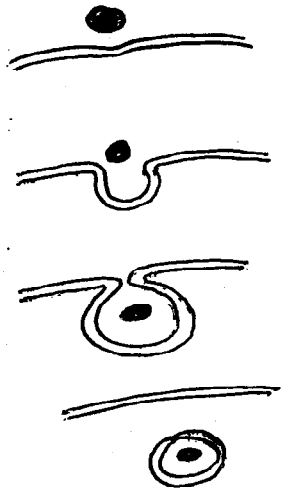

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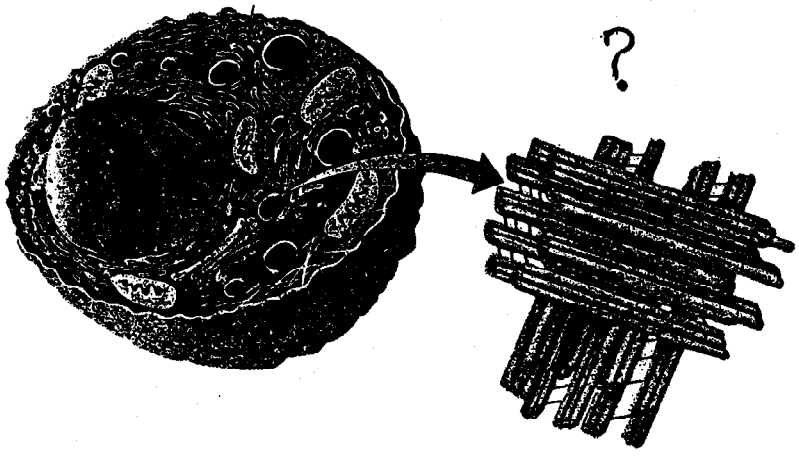

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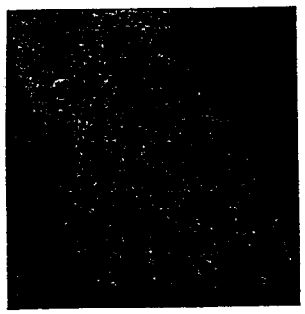


Good luck

BITS, Pilani – Dubai Campus
Knowledge Village, Dubai
First Semester - 2003/2004 – Section: 1 & 3
Test - 2 (Open Book)

Course: General Biology / BioUC111 **Duration: 50 minutes**
Date: 14.12.03, Sunday 2nd period **Marks 50 / Weightage (20%)**

Note: Answer all the questions briefly and to the point.
All parts of the question should be done together
Draw diagrams where ever necessary
For objective questions completely correct answers will be given marks.

1) Assume that you have taken fried rice today with a piece of grilled chicken, and little yoghurt. What will happen to the food in your digestive system? **(8.0)**
   a) Mention the nutrients (biochemical ingredients) of the food.
   b) Mention which part of your digestive system interacts with the food.
   c) Name the enzymes that interact with the food
   d) Name the end products from the digested food

2) A woman having a weight of 195 Lbs and height of 5' 5" is considered to be obese. Justify the statement giving scientific reason. **(4.0)**

3) A boy has consumed Pasta, which consists of 635 gms of carbohydrates and fried bean-meat curry, which consists of 290 gms of fat, how much energy will he be getting from that food? **(4.0)**

4) Solve the problems: 21-year sports woman whose height is 5' 10" and weight 68 Kgs goes for an extensive exercise for 1 ½ hours a day. How much energy will she spend on that day? **(7.0)**

5) Calculate the BMI:
   - For a person whose weight is 5' 3" and weight is 190 Lbs.
   - Suggest the type of food and exercise that he must adopt. **(4.0)**

6) Which type of food compensates the Biochemical ingredients of grilled meat and poultry? Recommend some of them with reasoning. **(3.0)**

7) Mention the name of food which acts as anti carcinogenic. **(2.0)**

8) What do you mean by "ketone breath" briefly explain its phenomena **(2.0)**

9) It was noticed that after recovering from the head injury the 'patient – A' forget about his whereabouts. Another 'patient –B' is conscious but not able to express verbally. Which parts of the brain must have got affected in Patient A & B? **(2.0)**

10) Which hormone determines the behaviour of a person / responses / reactions / movements made by him in any situation **(2.0)**

11) Name the muscle, which has the ability to stay contracted for a long period with out being fatigued. **(2.0)**

12) **Correct the statements by giving reason** **(5 x 2 =10)**
   a) More the vassopresine is produced more you get excited.
   b) Vitamins are the sources of energy
   c) Vigorous and anaerobic exercises are most beneficial in weight loss.
   d) Sports personal must increase intake of protein in their diet.
   e) Hydrogen ion concentration in the blood rises when you breath more deeper.

BITS, PILANI – DUBAI CAMPUS

Knowledge Village, Dubai

QUIZ

1st year 1st Semester – Section 1 & 3

Course : General Biology (BIO UC111)
Wednesday 22nd October 2003
Second period 10.00 – 10.30am

Time 30 minute
Marks 50 x 1 = 50
Weightage 10

I Multiple Choice Questions:
(*Underline the correct answer choosing from the four options given*).

1) From the given under line the anabolic activity
a) Reproduction b) Respiration c) Osmosis d) Photosynthesis

2) The following is the non-membranous organelle of a plant cell
a) Ribosome b) Lysosome c) proxisomes d) vacuoles

3) If the parent cell of fruit fly has eight chromosomes, then the daughter cells following Meiosis will have:
a) Eight chromosomes b) Sixteen chromosomes c) Four chromosomes d) none of the above

4) The information gained by the direct observation of the event is referred as
a) Controlled data b) Empirical data c) Pseudo data d) Statistical data

5) The group of cells that perform particular function is referred as
a) Organ b) eukaryote c) tissue d) gland

6) During which phase of meiosis do homologous chromosomes separate?
a) Prophase II b) Metaphase II c) Anaphase 1 d) Anaphase II

7) Initiation codon in the protein synthesis is:
a) UGA b) AUG c) UAG d) UAA

8) The base that replaces Thymine in RNA is:
a) Adenine b) Guanine c) Uracil d) Cytosine

9) An abnormal number of chromosomes resulting from the non-disjunction of homologous chromosomes results in.
a) Trisomy b) sickle cell anemia c) sclerosis d) syndactylism

10) In electron microscopic studies tissues can't used once again because
a) They get charged b) They get preserved
c) Magnified for 100,000 times d) Magnified for 150,000 times.

11) "Programmed cell death" is referred as
a) Apoptosis b) Metastasize c) Mortal cells d) cell lethality

12) Which is the example of tertiary protein
a) Keratin b) Hemoglobin c) Cytochrome d) Silk

13) Relatively the sweetness is very low in
a) Sucrose b) Lactose c) Galactose d) Saccharine

14) Usually un-saturated fatty acids found liquid in the following temperature
a) 10 degrees of C b) 0 degrees of C c) 20 degrees of C d) 37 degrees of C

15) The first amino acid formed in any polypeptide chain in prokaryotes is:
a) Methyline b) Methyl acid c) Methionine d) Metaoxide

16) From the following which is the membranous organelle.
a) Lysosome b) Ribosome c) Nucleolus d) Centriole.

17) Occurrence of an extra chromosome at 21st pair of chromosome is by mechanism called
a) Isolation b) translocation c) deletion d) addition

18) The cell organelle that is responsible for protein synthesis.
a) Ribosome b) lysosome c) chromosome d) centrosome

19) 1 Nanometre is equal to
a) 1/millionth of a mt. b) 1/billionth of a mt. c) 1/trillionth of a mt. d)1/ quadrillionth of a mt.

20) Linoleic acid is found in
a) Solid meat fat b) Corn oil c) Cheese d) Saturated fatty acids

21) The organelle responsible for manufacturing of ribosomes is
a) Nucleolus b) Nucleus c) Golgi apparatus d) Vacuoles

22) Mosaic model is referred to
a) Cell membranes b)Lipids in the organelles c)Proteins in the organelles d)Non of the above

23) Mitochondria is present
a) Only in animals b) Only in plants c) Present in both d) Present only in prokaryotes

24) Pathogen is one, which
a) Brings in immunity b) Causes disease c) Build the proteins d) Liberate the energy

25) The drug which add additional muscles in the human being is called as
a) Anabolic steroids b) Catabolic steroids c) Progressive steroids d) Muscle steroids

26) When human RBC kept in the Hypertonic solution the cell size will
a) Remain same b) Cell will shrink c) Cell will burst d) Cell will swell

27) An experiment that allows for a comparison of two events that is identical in all but one aspect is referred as
a) Empirical experiment b) direct experiment c) even experiment d) controlled experiment.

28) Which one is not the Biological improvement
a) Chickens lay more eggs b) Dairy cows give more milk
c) Beef cattle grow faster d) Birds migrate to far distance places

29) Crossing over of chromosomes occurs in
a) Prophase b) G1 phase c) Prophase 1 d) Synthesis phase

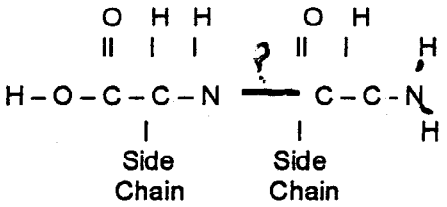
30) Discovery of penicillin is
a) An accidental discovery b) intentional discovery c) voluntary discovery d) imperative discovery

31) Which unit doesn't represent Angstrom?
a) 1/one ten billionth of a mt. b) 1/10,000,000,000 of a mt. c) $10m^{-10}$ d) 1/millionth of a mt.

32) The statement that provides answer to the question is
a) Hypothesis b) verification c) observation d) result

II **Fill in the blanks**:

33) Mention the bond



_____

34) Arrange the stages in a proper sequence
Cyto kinesis, Growth phase, synthetic phase, Gap 2 phase, Karyokinesis

_____ _____ _____ _____ _____

35) If lysosomes do not perform properly during the development, infants are born with webbed feet which is referred as _____

36) The model of DNA was discovered by_____

37) Amniocentesis is an example _____

38) Name the author of Biology textbook prescribed for you. _____

39) The process in which a water molecule is removed and two monomers joined to form a polymer is referred as _____

40) A carbon skeleton has –OH functional group is referred as _____ group.

III Mention the body regions associated with cancer:

41) Leukemia _____

42) Retinoblastoma _____

43) Basal cell carcinoma _____

44) Endometrial _____

IV Expand the abbreviations

45) DPT_____

46) TT _____

47) DNA _____

48) ATP _____

49) MMR _____

50) BCG _____