BITS, PILANI – DUBAI CAMPUS

Knowledge Village, Dubai

Test-1 (closed book)

1st year 1st Semester – Section 1, 3 & 5

Sunday 31st October 2004

Course: General Biology (BIO UC111)

Marks: 40 / Weightage 20

Note: *1. Answer briefly and to the point. Avoid unnecessary explanation.*
2. All parts of the question should be done together
3. Draw diagrams wherever necessary

Q.1. Identify and name it.

(24 x ½ = 12 marks)

1. A type of cell death in which the cell uses specialized cellular machinery to kill itself; and get rid of cells that threaten the animal's survival is referred as_____
2. A congenital disorder caused by having an extra 21st chromosome; results in a flat face and short stature and mental retardation_____
3. In cell cycle, DNA replicates in _____ phase.
4. A small cell containing little cytoplasm that is produced along with the oocyte and later discarded is _____
5. The arrangement of the chromosomes based on number, size and structure is _____
6. Biting & grinding food in your mouth so it becomes soft enough to swallow _____
7. The part of the small intestine between the stomach and the jejunum _____
8. The jawbone in vertebrates; which is fused to the cranium_____
9. A tooth for cutting or gnawing; located in the front of the mouth in both jaws_____
10. Exercise in which opposing muscles contract and there is controlled movement (the length of the muscles changes). _____

Q.2. Choose the correct answer from the given options.

11. If the parent cell of fruit fly has 8 chromosomes, then the daughter cells following meiosis will have: 8 chromosomes / 16 chromosomes / 4 chromosomes / none of the above
12. During which phase of meiosis do homologous chromosomes separate?
Prophase II / Metaphase II / Anaphase I / Anaphase II
13. Any of several complex proteins that are produced by cells and act as catalysts in specific biochemical reactions are - Enzymes / inhibit Pharynx ors / transducers / amino acids.
14. A small congenital pigmented spot on the skin or a small rounded protuberance warts may leads to- Leukoderma / Leukemia / Osteoporosis / Basal carcinoma
15. The passage to the stomach and lungs; in the front part of the neck below the chin and above the collarbone- Larynx / Syrinx / Pharynx / Esophagus
16. The phase between meiosis 1 and meiosis 2 is referred as:
Inter kinase / Inter prophase / inter synthatase / inter G-phase

Q.3. Expand the Abbreviations given below.

17. FMN
18. NADP
19. SDA
20. RDA

Q.4. Correct the statements and rewrite the correct statement.

21. A muscular sac attached to the liver that secretes bile needed for digestion of proteins is referred as gall bladder
22. Prostate cancer is very common in Indian women.

23. Vitamin E is referred as Antihaemorrhagic vitamin.

24. Exercise initially gains weight because muscles proteins get disintegrate and fats get emulsified.

Q.5. Write two differences between the following **(4x2=8 marks)**

25. Centrioles and centromeres:
26. BMR & BMI

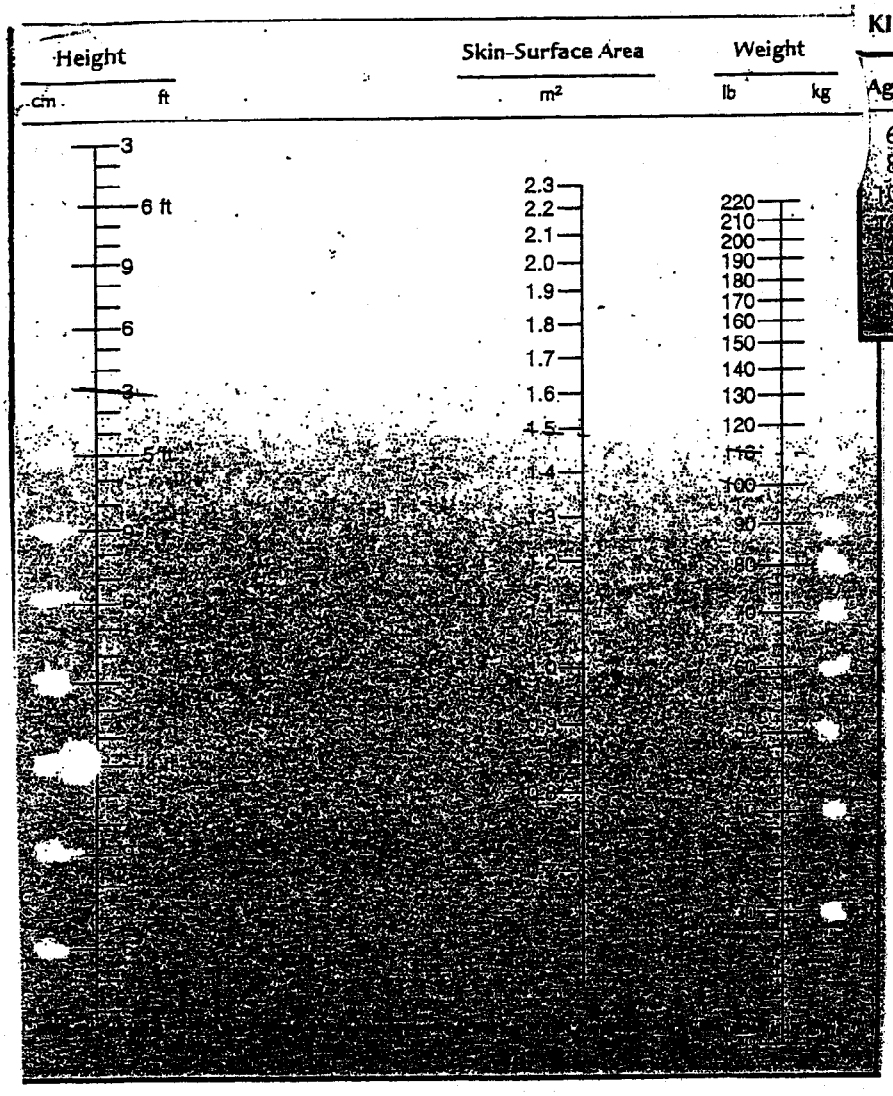
Q.6. Answer briefly (not more than 5 sentences) **(5x 2 =10)**

27. Competitive inhibition

28. Sensitivity of PH on Enzyme activity.

Q.7. Calculate the energy required. **(10 marks)**

29. Two presidential candidates tussle closely and campaign their electorates by walking for 3 m/hr. The first candidate, GB 58years old whose height is 5' 10" and weighs 180lb.covers 9 miles in a day. Another candidate, JK 4 years elder to the GB – is taller than the former by 9 cms and heavier by 10 kgs. covers 12 miles in a day.
Calculate how much energy will they spend individually on campaigning every day by traveling by foot.



KILOCALORIES PER DAY PER SQUARE METER OF S

Age	Male	Female	Age	Male	Female
6	1,265	1,217	20–24	984	886
8	1,229	1,154	25–29	967	878
10	1,188	1,090	30–40	948	876
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BITS, Pilani – Dubai Campus
Knowledge Village, Dubai
Test – 2 (Open Book)

1st year – Sections: 1, 3 & 5
Course: General Biology / BioUC111
Date: 12th Dec. 04

Duration: 50 minutes
Marks 40 / Weightage (20%)

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 at least first time in your answer
Marks will be given for only fully correct objective answers.

I) Name the following:

(15 x 1 =15)

1) Either of the paired tubes connecting the middle ears to the nasopharynx; equalizes air pressure on the two sides of the tympanum.

2) The hearing organ of the inner ear; contains receptors that respond to sound waves.

3) Any chromosome that is not a sex chromosome; appear in pairs in body cells but as single chromosomes in spermatozoa.

4) Bicuspid valve is otherwise referred as

5) Oxytocin is otherwise referred as

6) The surface area where exchange of gases takes place in human respiratory system

7) Enlargement of bones of limbs & face often accompanied by disproportionate / overproduction of one of the hormones of hypothalamus.

8) The stirrup-shaped ossicle that transmits sound from the incus to the cochlea.

9) Auditory region, which causes vertigo.

10) A double-layered serous membrane that surrounds the heart.

11) A ductless glandular organ at the base of the neck that produces lymphocytes and aids in producing immunity; atrophies with age

12) The region of the brain which is named after the fish

13) The discharge / voiding of urine

14) A general term for female steroid sex hormones that is secreted by the ovary and Responsible for typical female sexual characteristics

15) Sense organ influenced by decibels

PTO

II) Choose the correct answer from the options given below and write it in your answer paper (5 x 1 = 5)

16) Removal of chloride ions from blood takes place from
PCT. Loop of Henle's. DCT, Bellini's duct

17) Major constituent of plasma is
NaCl, Hcl, $C_6H_{12}O_6$, H_2O, NH_3

18) In human, blood returning to the heart from lungs return to
Left Auricle, Right Auricle, Left Ventricle, Right Ventricle, Pulmonary Artery

19) Chemoreceptor sensory organ
Gustatory, Tungstatory, Auditory, Visual

20) Hormone, which dose not influences the reduction of urine flow by kidney tubules.
ADH, Vasopressin, Pitressin, Oxytocin

III) Answer briefly in 2 – 3 sentences (4 x 2 = 8)

21) With specific reference to receptors explain how the eyes of the given birds are evolved.
- Owl is a nocturnal bird
- Eagle spots its prey from greater heights

22) What is common in the following?
Gyri & Sulci, alveoli, lamellae & cristae.

23) A person met with an accident and after the recovery, the ability to sense the position, location, orientation and movement of the body and its parts has been lost. Which part of the brain got affected?

24) There are 46 chromosomes in human somatic cells.
a) How many autosomes are present in male gamete?
b) How many allosomes are present in female gamete?
c) How many chromosomes does a girl receive from her mother?
d) How many autosomes are present in the somatic cells of the boy?

IV Solve the problem (12 x 1 =12)

25) A curly haired female with Tourette syndrome marries to a straight haired normal man. What are the possible phenotypes one could expect in their offspring.

Best of luck

BITS, Pilani – Dubai Campus

Knowledge Village, Dubai

Comprehensive Examination - 2004/2005

1st year – Section: 1, 3 & 5 (closed Book)

Course: General Biology / BioUC111

Date: 02-01-05, Sunday **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.
Marks will be given for only fully correct objective answers.
Draw diagrams wherever necessary.
Full form of the biological terms to be mentioned at least first time in your answer

A) Choose the correct answer from the options: **(5 x 1= 5)**

1) Chromatides under goes synapses to form bivalent in _____ phase of cell division.
Prophase 1, prophase, meiosis 2, anaphase -1

2) Human dental formula is
i2/2; c 1/1 ; pm 2/2; m 3/3, i1/1; c2/2; pm2/2;m3/3, i2/2; c1/1;m3/3;pm2/2, i2/2;c1/1;pm3/3;m2/2

3) Automatic activities are controlled by _____ part of the brain.
Medulla oblongata, cerebrum, cerebellum, spinal cord

4) When prosthetic / cofactors combines with organic groups they will form
Coenzymes , activators, apoenzymes, cofactors.

5) In normal men; systolic BP will be
120ml/Hg, 80ml/Hg, 120/80 ml/Hg, 80/120 ml/Hg.

B) Choose the odd one and write the appropriate reason for choosing it: **(5 x 1= 5)**

6) Nucleolus, ribosome, centrioles, lysosomes

7) Bat, whale, echidna, Octopus

8) Glucose, galactose, fructose, sucrose

9) Krebs cycles, citric acid cycle, TCA cycle, Calvin cycle

10) Retinoblastoma, leukemia, apoptosis, synapses

C) Rearrange the following orderly: **(4 x 1= 4)**

11) Tissue, cell, organ, organism, organ system, community, population, ecosystem, atmosphere.

12) Esophagus, pyloric stomach, cardiac stomach, duodenum, ileum, jejunum, colon, cecum, rectum.

13) Aorta, arteriole, renal artery, capillaries of glamorous, vasa recta, arterioles of Bowman's capsule, inferior venacava, renal vein.

14) Animalia, vertebrata, chordata, primates, mammalia, homedae, genus, species.

D) Name the phylum to which they belong to: **(5 x 1= 5)**

15) Pearl oysters, 16) Jellyfish, 17) Leech, 18) Sea cucumber, 19) Liver fluke

E) Name the minerals present in the following: **(5 x 1= 5)**

20) RBC, 21) exoskeleton, 22) thyroid, 23) Nerve , 24) chlorophyll.

F) Expand the abbreviation: **(6 x 1= 6)**

25) BCG, 26) HIV, 27) PCB, 28) PGAL 29) LTH, 30) HDLP

PTO

G) Identify the phenomenon and name it. **(5 x 1= 5)**

31) When human RBC kept in a hypertonic solution it will shrink.
32) When a pair of homologous chromosomes fail to separate properly during meiosis.
33) Normal growth / reproduction of insects are controlled by chemical called Arsenal.
34) Use of the appearance of science to mislead, which takes on the favour of science
35) Sequence of events involved in the evolutionary development of taxonomical groups is referred as

36) **Calculate** BMI of a woman whose weight is 82.5Kgs and height 5'6". Mention the category in which she falls and what would you advise her. **(8 marks)**

37) Consider normal male marries to heterozygous hemophilic female. What are the possibilities of their offspring? **(12 marks)**
Explain the problem stepwise. Write the possible phenotypes and genotypes

H) write the answers in two sentences: **(5 x 2 = 10)**

38) Mention the layers, which wraps the brain
39) Mention the factors which disfigure the demography.
40) Mention 5 characteristic features of living things.
41) Which terrestrial biome is commonly referred as "arctic Desert" write the fauna & flora available.
42) Give examples of polygenic inheritance and multiple alleles.

I) Briefly explain the following (not more than 5 sentences) **(5 x 5 = 25)**

43) Mention the hormones produced by the posterior lobe of pituitary gland and write their functions and also specify their other names.

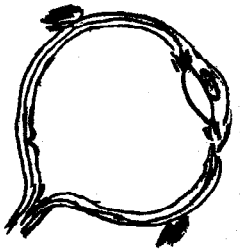
44) Explain the Endosymbiotic theory:

45) Name the fat-soluble vitamins and their deficiency diseases.

46) Briefly explain Prophase 1.

47) What are the common eating disorders seen in the present days, write their symptoms and treatment.

J) Draw the given diagram in your answer paper, identify and label them **(10 x 1=10)**
(Directly label them on the diagram don't write it separately)



- Cartilaginous region of he eye
- Space between transparent layer and the lens- anterior chamber
- Place where visual cells responsible for the bright light are more
- The nerve which relay the optical message to brain
- The muscles which helps in the rotation of the eye
- The muscles which helps in the accommodation process
- The layer which provides food to the eye
- The muscle which holds the lens
- The region which is an extension of choroidal layer
- The liquid present in the posterior chamber of the eye

Good luck