A. G. High School and G. & D. Parikh Higher Secondary School

Navrangpura, Ahmedabad - 380 009.

Semester - IV : Preliminary Examination : 2014

Date : 20-02-2013	Std. : 12	Marks	: 100
Day : Thursday	Subject : Biology	Time	: 3 Hrs.

PART - A **Marks : 50**

Instructions :-

1. **There are 50 multiple choice type objective questions in this PART-A.**
2. **All questions are compulsory; Each question carry 01 marks.**
3. **Read each question carefully, select most correct alternative and darken the circle of the correct answer with ball-point pen on the OMR Sheet given to you.**

1. Match the columns .

A (Organism)	B (Chromosomes) (2n)
1. Rice	(a) 38
2. Cate	(b) 78
3. Apple	(c) 24
4. Dog	(d) 34

(A) (1-b) (2-d) (3-c) (4-a) (B) (1-c) (2-a) (3-d) (4-b)
(C) (1-d) (2-b) (3-a) (4-c) (D) (1-c) (2-a) (3-b) (4-d)

2. Match the columns.

P	Q
(a) Bio-Patent	(i) Ecology and Human health
(b) Bio-piracy	(ii) Moral principles
(c) Bio-safety	(iii) Supreme control
(d) Bio-Ethics	(iv) An unauthorized eploitation

(A) (a-iii) (b-iv) (c-i) (d-ii) (B) (a-iii) (b-i) (c-ii) (d-i)
(C) (a-iv) (b-iii) (c-ii) (d-i) (D) (a-ii) (biv) (c-i) (d-iii)

3. Match the Columns.

A	B
(i) Duplication	(a) loss of one or more genes
(ii) Inversion	(b) genes sequence is maintained or inverted
(iii) Deletion	(c) part of chromosome joins to other chromosome
(iv) Translocation	(d) No loss or gain of genea

(A) (i-b) (ii-a) (iii-c) (iv-d) (B) (i-c) (ii-b) (iii-a) (iv-d)
(C) (i-b) (ii-d) (iii-a) (iv-a) (D) (i-d) (ii-c) (iii-d) (iv-a)

4. Which hormone induces ovulation ?
(A) Estrogen (B) FSH
(C) Projestrone (D) LH

5. What is formed by reverse transcriptase ?
(A) c-RNA (B) r-RNA
(C) m-RNA (D) t-RNA

6. Which cranial cavity is enclosed by dinecephalon ?
(A) Second (B) First
(C) Fourth (D) Third

7. Which gene is expressed in F1 generation ?
(A) Dormant (B) Linked
(C) Dominant (D) Recessive

8. Which enzyme remove nucleotides from the ends of DNA ?
(A) Exonuclease (B) Endonclease
(C) Helicase (D) Ligase

9 What is absent in protoplasm of an ovum ?
(A) Tail (B) Nucleus
(C) Mitochondria (D) Centrides

10. Which element was the most active during primitive earth conditon ?
(A) Hydrogen (B) Nitrogen
(C) Oxygen (D) Carbon

11. Fluid surrounding a developing foetus is called -
(A) Nutritive Fluid (B) Amniotic fluid
(C) Fertilization fluid (D) Albuminous fluid

12. An egg appartus is formed of
(A) Two cells (B) One haplaid + one diploid cell
(C) Three haploid cells (D) one diploid + Two haploid cell

13. How many condons acts as STOP condons ?
(A) 3 (B) 61
(C) 9 (D) 4

14. In bright light Rhodopsin -
(A) forms blind spot (B) splits
(C) is resynthesized (D) releases neurotransmitter

15. In co-dominance -
(A) No allele is dominant over the other
(B) Mixed effect of both genes is observed
(C) both genes express their effects jointly
(D) both the genes expresses theri expression independently.

16. C-DNA means .
(A) Central DNA (B) Carrier DNA
(C) Complementary DNA (D) Clone DNA

17. The division of human zygote starts -
(A) in ovary (B) in oviduct
(C) in uterus (D) in vagina

18. Protobiogenesis means.
(A) The origin of first life, from non-livings on the earth
(B) Formation of new life, from pre-existing organisms.
(C) Life is originated from interaction of chemical substances
(D) Body organisation changes as per requirement

19. Due to Vasectomy -
(A) Immatile sperms are formed (B) Spermless semen is stopped
(C) Semen is not produced (D) Spermless semen is ejaculated

20. Through which pore does Pollen tube comes out from the pollen grain ?
(A) Micro pore (B) Micro pyle
(C) germ pore (D) Nuclear pore

21. Biotechnology may pose unforeseen risks to
(A) Environment & Biodiversity (B) Immunity & Intelligence
(C) Green plants & Bacteria (D) Ecology & Economics

22. Which hormone suspends ovulation -
(A) Estrogen (B) Progestrone
(C) Relaxin (D) Somatostatin

23. Organisms live a life adopted to their -
(A) Work-place (B) Family-members
(C) Environment (D) Choice

24. Sporulation occurs in
(A) Vorticella (B) Fucus
(C) Planaria (D) Amoeba

25. It happens rarely -
(A) Spontaneous mutation (B) Back mutation
(C) Point mutation (D) Lethal mutation

26. Selectable marker often possess -
(A) antibiotic resistance genes (B) enzyme activating sites
(C) antibiotic producing genes (D) pathogenic genes

27. In which method a section of a gene of the pathogenic organism is multiplied with the help of suitable primer ?
(A) MTP (B) AFT
(C) PCR (D) ART

28. Synthesis of Auxins is higher in -
(A) an etiolated position (B) an endospermic seed
(C) the ripening fruits (D) a health leaf

29. It is now known that all segments of DNA -
(A) do not code for proteins (B) have repeated DNA sequence
(C) code for proteins (D) have repetitive function

30. The residual persistant nucellus is called -
(A) Pericyde (B) Perisperm
(C) Proembyro (D) Pericarp

31. What is the major disadvantage of external fertilization ?
(A) It require a special mechanism for gamete transfer.
(B) It is a complex and very slow process
(C) The offsprings are extremely vulnerable to predators
(D) The offsprings are not identical tot he parents.

32. How many aminoacids are present in Chain-A of human insulin ?
(A) 30 types (B) 21 types
(C) 51 (D) 21

33. Which hormone stimulates the growth of mammary gland and the secretion of milk after delivery ?
(A) Oxytocin (B) Prolactin
(C) Estrogen (D) Progesterone

34. When the population in in equilibrium -
(A) the rate of evolution is zero (B) the rate of evolution is hightest
(C) the rate of evolution is steady (D) the rate of evolution is lowest

35. Select the true statement -
(A) The loss or gain of one or more centromere in the chromosome set is called Aneuploidy.
(B) A darkly stained body seen in the mammalian somatic cells of is known as sex-chromation.
(C) When homozygous individual of F_1 is crossed with corresponding double reccessive, all the offspring will show dominant phenotype.
(D) The hybridization between dominant parent and homozygons F_1 is called Test Hybridization.

36. Select the True statement -
(A) Cotyledones of maize embryo are called scutellum.
(B) Pallen tube passess through stigma, style, ovary, ovule, micropyle, nncellus and finally ruputures it tip in embryo sal.
(C) Apomixis is a form of sexual reproduction that mimic asexual reproduction.
(D) In dicots like Bean, Castor, Orchid, Ginger and Nephrolepis, endosperm are completely consumed by the developing embrye.

37. Select the True statement.
(A) DNA usually cannot get across cell membrane since it is a hydrophilic molecule.
(B) DNA can easily pass across cell membrane since it is a hydrophilic molecule.
(C) A DNA molecule is denatured by heat at 50-65° C
(D) Only those enzymes that join the DNA and from primer RNA are useful in DNA Replication.

38. Select False statement.
(A) Hormones are also secreted by some tissues which are not endocrine glands.
(B) Steroid mostly regulate gene expression by the interaction of hormone-receptor complex with the genome.
(C) Ovarian growth is induced by one peptide hormone.
(D) CCK acts on gall bladder stimulate it to produce bile juice.

39. Select False statement.
(A) Human mid brain is very small and it consists of four small lobes.
(B) The hypothalamus is clearly visible in the dorsal view of the brain.
(C) Two cerebral hemispheres are connected by a large bundle of myelinated fibres.
(D) Each cerebral hemisphere encloses a cavity called lateral ventricle.

40. Select False statment.
(A) Nephrolepis is a homosporous, while seaginella is a heterosporous.
(B) Zoospores produced by some algae and fungi can swim in water for some time, and then directly develop into new independent individuals.
(C) In multiple fission, the cell divides several times by mitotic division and form large numbers of offsprings.
(D) Genetically identical offsprings resulting from a single parent are considered as clones.

41. Select False statement.
(A) Gene is formed of 4 main regions. (1) promotor, (2) initiator side (3) coding sequence and (4) termination site.
(B) At all times in the life cycle, every cell contains the same set of genes.
(C) Different genes in an organism are meant for the synthesis of different proteins.
(D) The genes are expressed or not expressed depends on whether the termination switch is on or off.

42. Select the True statement.
(A) Man is always responsible for inheritance of colour blindness in Man. (Genetically)
(B) Colour blindness is common in man but rare in woman.
(C) Somatic mutation is inherited regularly.
(D) In spinach sex is controlled by a single gene, which is located in the Y-chromosome.

43. Match the columns.

A	B
(a) Water	(p) Respiration
(b) Oxygen	(q) Germination
(c) Light	(r) Turgidity
(d) Temperature	(s) Food

(A) (a-q) (b-p) (c-r) (d-s)
(B) (a-p) (b-r) (c-s) (d-q)
(C) (a-r) (b-p) (c-s) (d-q)
(C) (a-s) (b-q) (c-r) (d-p)

44. Match the columns.

A	B
(a) Plasmid - a cloning vector	(P) Third stage
(b) Selection of clones	(Q) Second stage
(c) Selection of desired piece of DNA	(R) Fourth stage
(d) Recombination DNA into host cells	(S) First stage

(A) (a-Q) (b-R) (c-S) (d-P)
(B) (a-P) (b-R) (c-P) (d-Q)
(C) (a-R) (b-S) (c-P) (d-Q)
(D) (a-Q) (b-P) (c-S) (d-R)

45. Synthesis and secretion of which hormones is under the regulation of neurosecretory cells ?
(A) Pineal hormones
(B) Posterior pituitary hormones
(C) Thymus hormones
(D) Hypothalamus hormones

46. An associatoin of characters of Ape and Human could be noted in-
(A) Aegyptopithecus (B) Kenyapithecus
(C) Dryopithecus (D) Australipithecus

47. What could be said for a colour blind, male having one barr body ?
(A) Contains genes CC (B) Contains genes Cc
(C) Contains genes cc (D) This is not possible

48. Which of the following is correct for Neuron in the resting state ?
(A) Na^+ are less towards inside and more K^+ towards outside.
(B) K^+ are more towards inside and more Na^+ are of outside.
(C) K^+ are less towards outside and more Na^+ are at inside.
(D) Na^+ are more towards outside and less K^+ are at inside.

49. What is correct for any single strand of DNA.
(A) Numbers of A+G could not be equal to the numbers T+C always.
(B) Numbers of A+G will be always equal to the numbers of T+C.
(C) Numbers of A+T will be always equal to the numbers of G+C.
(D) Numbers of A+T will be always more than the numbers of G+C.

50. Naturally autogamy is possible only in
(A) Unisexual flowers, with Monoecious condition
(B) Unisexual flowers, with Dioecious condition.
(C) Bisexual flowers
(D) Unisexual flowers

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Time : 2 Hours **Part - B** **Marks : 50**

Instructions :-

1. There are THREE sections (A, B and C) in this PART-B. Total 18 questions are there.
2. All questions are compulsory but internal options are given according to scheme.
3. Draw neat, clean and properly labelled scientifically correct line drawing as per requirements.
4. Maintain sequence.

Section - A

Answer question numbers 1 to 8, as directed. Each question carry 2 marks. **(16)**

1. Explain the drawbacks of Lamarkism.
2. Describe Nastic movements with examples.
3. Explain the process of cutting of DNA at specific locations with labelled diagram.
4. State the future challenges of HGP.
5. Explain the ultra structure of Retina with labelled diagram.
6. Draw and explain with CHART only - "Preparation of Human Karyotype."

7. Show the position of thyroid and parathyroid gland with labelled diagram and explain Parathyroid hormones.

OR

Draw labelled diagram showing pituitary and its relationship with Hypothalamus. Explain details about GH only.

8. Draw labelled diagram of Front view of female reproductive system and write about Uterus only.

OR

Draw labelled diagram of Front view of male reproductive system and wirte about Epididymis only.

Section - B

Answer question numbers 9 to 14. Each question carries 3 marks. **(18)**

9. Explain various types of Seed dormancy.
10. Describe the structure and function of Adrenal Cortex.
11. Explain Natural methods for controlling the population increase.
12. Describe Gametogenesis. (Pre-fertilization event)
13. Explain 3 examples of defective metabolic reactions caused by recessive genes.

OR

Describe - Gene mutation and state note worthy points regarding gene mutation.

14. Explain the structure of megasporangium with labelled diagram.

OR

Describe the development of female gametophyte with labelled diagram.

Section - C

Answers the question numbers 15 to 18 in detail. Each question carries 4 marks. **(16)**

15. Draw T.S. of Ovary and explain ogenesis.
16. Explain the production of Human insulin with labelled diagram.
17. Name the three steps of biosynthesis of proteins (traslation) and explain the Elongation process with labelled diagram.
18. Explain Reflex action with labelled diagram.

OR

Explain Transmission of Impulse at a synapse with labelled diagram.

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