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DATE: **30-05-2017**

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE – 27**

**B.Sc. ZOOLOGY – VI SEMESTER**

**SPECIAL SUPPLEMENTARY EXAMINATION: MAY 2017**

**ZO 6112 – Histology and Genetics**

**Time: 3 hours Max. Marks: 100**

ATTACH THE QUESTION PAPER WITH THE ANSWER SCRIPT

**Answer the following. 1 X 20 = 20**

1. The intestinal mucosal epithelium is modified for
2. Absorption b. Secretion c. Protection d. All the three
3. ----------------papillae are keratinized to provide a rough surface.
4. Filiform b.Fungiform c. Circumvallate d. Foliate
5. The podocytes are

a. Parietal layer of Bowman’s capsule b. Visceral layer of Bowman’s capsule

c. Glomerular cells d. Cells of afferent arteriole

1. In man, the production of sperms is a continuous process because
2. Germ cells function as stem cells b. Testosterone is continuously produced

c. Late male maturity d. Germ cells divide at a faster rate

1. The follicular cells of thyroid gland are the only cells that absorb.
2. Selenium b. Copper c. Iodine d. Sodium
3. Dolly is a
4. Transgenic animal b. Hybrid c. Mutant d. Clone
5. People of --------blood group can always receive all types of blood without any risk.
6. AB+ve b. AB-ve c. O+ve d. O-ve
7. The frequency of genetic disorders increases in
8. Inbreeding b. Outbreeding c. Linkage d. Mutations
9. The missing enzyme in albinos is

a.Phenylalanine hydroxylase b. dopa c. Tyrosinase d. homogentisic acid oxidase

1. Gregor Mendel’s hybridization work did not involve
2. Multiple allelic genes b. Sex linked genes c Linked genes d. All the three
3. The total number of gametes formed in the genotype BbRrTt is
4. 6 b. 4 c. 3 d. 8
5. In sickle cell anemia the amino acid glutamic acid is replaced with
6. Valine b. Lysine c. serine d. Alanine
7. Generally a gamete contains
8. One allele of a gene b. Two alleles of a gene c. All the alleles of a gene
9. None of these

ZO-6112-A-17

1. E.coli with pBR322 amprinsert can be cultured in a medium containing the antibiotic ampicillin. True / False

1. In E.coli the enzymes for lactose metabolism are synthesized from a
2. Monocistronic mRNA b. Polycistronic mRNA c. snRNA d. hnRNA
3. The dihybrid test cross ratio for linked genes is always 1:1. True / False
4. The splenic capsule penetrates into the reticular tissue of spleen as

a. Trabaculae b. Red pulp c. White pulp d. Cords of Billroth

1. Injury to adrenal cortex is not likely to affect the secretion of.

a. Adrenaline b. Cortisone c.Aldosterone d.Cortisol

1. Name any protein database that gives information about the sequence and structure of proteins.
2. In human beings, clones appear naturally in the form of

a. Siblings b. Fraternal twins c. Identical twins d. None of these

**II. Answer any EIGHT of the following 5 X 8 = 40**

1. Explain the histological details of the spleen with a labeled diagram.
2. Explain the histological details of thyroid gland with a labeled diagram.
3. Bring out the histological details of a hepatic lobule with a neat labeled diagram
4. Mention the antigens, antibodies and genotypes of the ABO groups.
5. What are restriction endonucleases? Give an example.
6. What are heterogametic males? How is sex determined in man?
7. What is positive eugenics? List any five methods.
8. Note: In fowls the gene R for rose comb, P for pea when present together produce a walnut. But the recessive alleles of these together produce a single comb.

Problem: A bird with walnut comb was crossed with the one having rose comb to produce 3/8 walnut, 3/8 rose, 1/8 pea and 1/8 single combed birds in F1. Determine the genotypes of the parents.

1. Note: In *man* the gene for colour blindness is X-linked and recessive.

Problem: A colour blind woman marries a man of normal vision. They have a daughter and a son. Their daughter marries a colour blind man. What kind of vision would you expect in their children?

1. Explain the law of segregation with a suitable example.

**III. Answer any FOUR of the following 10 X 4 = 40**

1. Explain the histological details of the seminiferous tubule with a labeled diagram.
2. Pancreas is both an exocrine and endocrine gland. It secretes the most powerful digestive juice and hormones essential for life. Bring out its histological details.
3. Explain the inheritance of a sex-linked recessive gene with an example you have studied.
4. Sex chromosomal aberrations are very common in aging oocytes. What happens when erroneously produced ova 22XX and 220 are fertilized with normal sperms?
5. Explain the various steps involved in the production of human insulin.
6. You are subjecting the males of Drosophila melanogaster to X-rays to induce a lethal recessive mutation in the X-chromosome of their sperms. Design an experiment to detect this.

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