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| **UT/BIAK/1223/A 09-NOV-2023** | | | |
| **UNIT TEST (2023-24)**  **ANSWER KEY** | | | |
| **Subject: BIOLOGY**  **Grade: XII** | | Max. Marks:50Time:2.5 Hrs. | |
|  | **SECTION A** | | 1\*10 |
|  | A- Degenerating synergids, B- Zygote,  C- PEC, D-PEN, E-Degenerating antipodal cells | | |
| 2 | c.Perisperm | | |
| 3. | c. Proliferation of endometrium will take place | | |
| 4. | b.E1 - Exonuclease; E2 - Endonuclease; E3 - Restriction Endonuclease | | |
| **5.** | a. Defective ADA | | |
| 6. | d. Jaundice | | |
| 7 | c.Intra uterine devices | | |
| 8 | a.I-F, II-B, III - E, IV-H, V-A, VI-D | | |
| 9 | a. Auto-immune disease | | |
| 10 | b. Malaria, Plasmodium falciparum | | |
|  | **SECTION B** | | 2\*4 |
| **11.** | a) Plate 1, b-galactosidase enzyme is responsible for blue color. Gene is inserted in the  b-galactosidase site of the plasmid thereby causing insertional inactivation of the enzyme,  so no blue color is made. [1]  b) Plate II - Gene of interest not inserted in the plasmid [0.5]  Plate III - No plasmid | | 2 |
| **12.** | (1) Light pollen grains and pollen grains more in number. (2) Exposed stamen and feathery stigma. (b) Plant breeders carrying out wheat hybridization often take pollen grains from the 'pollen banks' and it is a good way of using the pollen grains that are more viable. | | 2 |
| **13** | In males, LH stimulates testosterone release by the Leydig cells of the testes. In females, LH stimulates steroid release from the ovaries, ovulation, and the release of progesterone after ovulation by the corpus luteum. | | 2 |
| **14** | The zygote or the early embryo upto 8 blastomeres (cells that are produced during cleavage of a zygote) is transferred into fallopian tube in zygote intra fallopian transfer (ZIFT) technique. If embryo contains more than 8 blastomeres and it is transferred into uterus than it is called intra uterine transfer (IUT). | | 2 |
|  | **SECTION -C** | | 3\*6 |
| **15** | a) Cannabinoids are compounds that are used as drugs.  b) They are extracted naturally from Cannabis sativa also called marijuana plant.  c) It is a psychoactive drug and affects the brain by altering the signals of the neurotransmitters. | | 3 |
| **16** | A-Antigen binding site  D-Light chain  E-Heavy chain  F-Disulfide bridge.  Malaria, **Gonorrhea**, Amoebiasis, Filariasis  Gonorrhoea – It is the only sexually transmitted disease | | 3 |
| **17** | a) Reproduction and child health care programme take care of uncontrolled population growth , STDS and social evil like sex abuse and sex related crimes  b)Foetal sex determination test based on chromosomal pattern in the amniotic fluid to study the chromosomal abnormalities in the fetus is called amniocentesis .it is banned to check legally female foeticide | | 3 |
| **18** | Uterus  Uterus is made of three tissue layers\_  a) External thin membranous layer -Perimetrium  b) Middle thick layer of smooth muscle-Myometrium  c) Inner glandular layer-Endometrium.  Endometrial layer undergoes cyclic changes during menstrual cycle. Myometrium exhibits strong contraction during delivery of the baby. | | 3 |
| **19** | i)Parthenocarpic fruits are formed when ovaries develop into fruit without fertilization. Apomictic seeds are formed when fomation of seeds take place without fertilization.  (ii) To maintain hybrid characters (year after year in a desired plant) and to avoid buying hybrid seeds every year (expensive seeds) farmers prefer using apomictic seeds.  **OR**  Draw a diagram of L.S. of an anatropous ovule of an angiosperm and label any 6 parts parts other than the gametophyte.  solution | | 3 |
| **20** | With RNA interference (RNAi) technique transgenic tobacco plant is protected against nematode /  Meloidogyne incognita using Agrobacterium as the vectors .ncmatode-speciic genes were introduced into the host plant, it produces both sense & anti sense RNA , these 2 RNAs form ds RNA, it silences specific mRNA of nematode (no protein synthesis / no translation). hence nematode cannot survive in tobacco plant =  **OR**  i) Functional enzyme lipase is given to the patient by injection. (1/2)  (ii) This procedure is not completely curative. (1/2)  b) The disease can be treated by using Gene therapy. (1/2)  Gene therapy is a collection of methods that allows correction of a gene defect that has been diagnosed in a child/embryo. (1/2)  Here genes are inserted into a person’s cells and tissues to treat a disease. Correction of a genetic defect involves delivery of a normal gene into the individual or embryo to take over the function of and compensate for the non-functional gene. (1) | | 3 |
|  | **SECTION -D** | | 4\*1 |
| 21 | Q. No. 21 is a case-based questions which has 4 subparts with internal choice in one subpart. | |  |
| . | (i) Identify X and Y in the above given figure.  X Y  (a) Amnion Chorion  **(b) Uterine wall Placenta**  (c) Placenta Uterine wall  (d) Uterine wall Amnion    (ii) What is the function of Z?  **(a) Z is an amniotic fluid which prevents desiccation of an embryo**.  (b) Z is yolk sac which functions as site of early blood cell formation  (c) Z is an amnion which takes part in placenta formation.  (d) None of these  (iii) Which of the following diseases cannot be diagnosed by amniocentesis?  (a) Down's syndrome (b) Sickle cell disease **(c) Jaundice** (d) Cystic fibrosis  **OR**  v) Which of these is a non-invasive technique of detecting fetal disorder?  (a) Fetoscopy (b) Chorionic villi sampling (c) Amniocentesis **(d) Ultrasound imaging**  (iv) Assertion: Amniocentesis is legally banned for sex determination.  Reason**:** Amniocentesis was being misused for aborting normal female fetus  **(a) Both assertion and reason are true and reason is the correct explanation of assertion**  (b) Both assertion and reason are true but reason is not the correct explanation of assertion  (c) Assertion is true but reason is false.  (d) Both assertion and reason are false. | | 4 |
|  | **SECTION -E** | | 5\*2 |
| 22 | GnRH stimulates the pituitary gland to produce follicle stimulating hormone (FSH), the hormone responsible for starting follicle (egg) development and causing the level of estrogen, the primary female hormone, to rise.  FSH is elevated during the early follicular phase and then begins to decline until ovulation.  **OR** | | 5 |
| 23 | (i) Repeated blood transfusion may result in contracting diseases like AIDS. The recipient must ensure that the donor’s blood is being screened for HIV and other pathogens. Also, he should make sure that doctors are using fresh needles.  (ii) In the absence of such measures, the patient can get infected by HIV (Human Immunodeficiency Virus), which causes AIDS. It is a threatening disorder that weakens the immune system by attacking helper T-cells in the body. A schematic diagram showing the cycle of proliferation and effects of retrovirus (HIV) in infected person is as follows  **OR**  a) When a female Anopheles mosquito bites an infected person, the parasites enter the mosquito’s body as gametocytes(½ mark). It leads to fertilization and development in the gut (½Mark)of the mosquito and undergoes further development to form sporozoites that are stored in salivary glands (½ Mark)until their transfer to human body.  In the human body – the sporozoites reach the liver and reproduce asexually (½ Mark), bursting the cells and releasing them into the RBCs as gametocytes (½ Mark). The rupture of RBCs releases a toxic substance called haemozoin, (1/2 Mark) which is responsible for the chill and high fever.  b) The thymus provides micro-environments for the development and maturation of T-lymphocytes. The T-cells themselves do not secrete antibodies but, they help B cells produce them. Therefore, the immunity will be reduced  **OR**  Disease: Cancer  Probable Causes:  Physical/ Environmental- Exposure to X – rays/ gamma rays/ UV rays;  Chemicals/Nicotine in tobacco/ other carcinogens  Biological- Viral oncogenes/ Mutations  Detection and diagnosis:  1. Cancer detection is based on biopsy and histopathological studies of the tissue;  blood and bone marrow tests for increased cell counts in the case of leukemias.  In biopsy, a piece of the suspected tissue cut into thin sections is stained and  examined under microscope (histopathological studies) by a pathologist.  2. Techniques like radiography (use of X-rays), CT (computed tomography) and  MRI (magnetic resonance imaging) are very useful to detect cancers of the  internal organs. Computed tomography uses X-rays to generate a threedimensional  image of the internals of an object. MRI uses strong magnetic  fields and non-ionising radiations to accurately detect pathological and  physiological changes in the living tissue.  3. Antibodies against cancer-specific antigens are also used for detection of  certain cancers.  4. Techniques of molecular biology can be applied to detect genes in individuals  with inherited susceptibility to certain cancers.  (any three methods)  5 | | 5 |

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