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| **UT/BIQP/1223/A 09-NOV-2023** | | | | | | | |
| **UNIT TEST (2023-24)** | | | | | | | |
| **Subject: BIOLOGY**  **Grade: XII** | | | Max. Marks:50Time:2.5 Hrs. | | | | |
| **Name:** | | | | | **Section:** | **Roll No:** | |
| ***General Instructions:***   * *This question paper consists of 6 printed pages.* * *All answers to be written in the answer sheet provided.* * *All questions are compulsory.* * *The question paper has five sections: Section A, Section B, Section C, Section D and Section E. There are 33 questions in the question paper.* * *Section–A has 10 questions of 1 mark each.* * *Section–B has 4 questions of 2 marks each.* * *Section–C has 6 questions of 3 marks each.* * *Section D has 1 case study question of 4 marks each.* * *Section E has 2 Questions of 5 marks each.* * *Wherever necessary, neat and properly labeled diagrams should be drawn.* | | | | | | | |
|  | **SECTION A** | | | | | | 1\*10 |
|  | Given below is the structure of fertilized embryo sac. Label A to E. | | | | | | |
|  | **a.** | A- Degenerating synergids, B- Zygote,  C- PEC, D-PEN, E-Degenerating antipodal cells | | **b.** | A- Degenerating antipodal cells,  B- Zygote, C- PEN, D-PEC,  E- Degenerating synergids | | |
|  | **c.** | A Degenerating synergids, B- PEC, C- PEN, D- Zygote, E-Degenerating antipodal cells | | **d.** | A-Degenerating antipodal cells, B-PEN, C-PEC, D-Zygote, E- Degenerating synergids | | |
| **2.** | Occasionally, in some seeds such as black pepper, beet and castor, remnants of nucellus are also persistent. This residual, persistent nucellus is called: | | | | | | |
|  | **a.** | Endosperm | | **b.** | Integument | | |
|  | **c.** | Perisperm | | **d.** | Aril | | |
| **3.** | What would happen if corpus luteum is not degenerated | | | | | | |
|  | **a.** | Progesterone will not be secreted | | **b.** | Endometrium will disintegrate | | |
|  | **c.** | Proliferation of endometrium will take place | | **d.** | Ovulation will take place | | |
| **4.** | Identify the activity of endonuclease and exonuclease in the given image. | | | | | | |
|  | **a.** | E1 - Endonuclease; E2 - Exonuclease; E3 - Restriction Endonuclease | | **b.** | E1 - Exonuclease; E2 - Endonuclease; E3 - Restriction Endonuclease | | |
|  | **c.** | E1 - Exonuclease; E2 - Restriction Endonuclease; E3 - Endonuclease | | **d.** | E1 - Restriction Endonuclease; E2 - Exonuclease; E3 - Endonuclease | | |
| **5.** | Gene therapy can be used to correct one of the following | | | | | | |
|  | **a.** | Defective ADA | | **b.** | Lack of B-Lymphocytes | | |
|  | **c.** | Defective Immunoglobuline | | **d.** | Lach of T-Lymphocytes | | |
| 6. | Which of the following cannot be detected in a developing foetus by amniocentesis? | | | | | | |
|  | **a.** | Klinefelter syndrome | | **b.** | Paternity | | |
|  | **c.** | Sex of the fetus | | **d.** | Jaundice | | |
| 7 | Which of the following is the most widely accepted method of contraception in India at present? | | | | | | |
|  | **a.** | Cervical caps | | **b.** | Tubectomy | | |
|  | **c.** | Intra uterine devices | | **d.** | vasectomy | | |
| 8 | Match the ARTs with their description -  l Collected gametes are made to form the zygote in the laboratory.  II. Zygote or early embryo with upto 8 blastomeres is transferred into the oviduct.  III. Zygote with more than 8 blastomeres is transferred into the uterus.  IV. Fusion of gametes within the female.  V. Transfer of ovum from a donor to the oviduct of the recipient.  VI. Sperm is injected into the ovum in-vitro  A). GIFT B). ZIFT C).AI D).ICS E). IUT F). IVF G). IUI H). In-vivo fertilisation | | | | | | |
|  | **a.** | I-G, II-B, Ill - F, IV-H, V-A, VI-D | | **b.** | I-F, II-B, III-A, IV-H, V-A, VI-G | | |
|  | **c.** | I-F, II-B, III - E, IV-H, V-A, VI-D | | **d.** | . I-G, II-B, III-F, IV-H, V-C, VI-E | | |
| 9 | In higher vertebrates, the immune system can distinguish self-cells and non-self. If this property is lost due to genetic abnormality and it attacks self-cells, then it leads to | | | | | | |
|  | **a.** | Auto-immune disease | | **b.** | allergic response | | |
|  | **c.** | active immunity | | **d.** | graft rejection. | | |
| 10 | Select the correct option regarding a disease with its causal organism where hemozoin is released by the rupture of RBCs. | | | | | | |
|  | **a.** | Amoebiasis, Plasmodium vivax | | **b.** | Malaria, Plasmodium falciparum | | |
|  | **c.** | Malaria, Rhinovirus | | **d.** | Pneumonia, Haemophilus influenzae | | |
|  | **SECTION B** | | | | | | 2\*4 |
| **11.** | The image below shows the result of plating bacteria in chromogenic medium after incorporating the gene of interest in plasmid. Some plates had blue colonies; some plates had white colonies. A single bacterium extracted from Plate I, II,III is shown below:    On the basis of your observations  a) Identify the plate(s) which is/are white. Give a reason.  b) Identify the plate(s) which is/are blue. Give a reason. | | | | | | 2 |
| **12.** | a) List any two characteristic features of wheat flowers that make it a good example of wind pollination.  (b) It is observed that plant breeders carrying out wheat hybridization often take pollen grains from the ‘pollen banks. Do you agree? Give one reason in support of your answer. | | | | | | 2 |
| **13** | How is the action of LH different in male and female? | | | | | | 2 |
| **14** | Explain the zygote intra-fallopian transfer technique (ZIFT). How is intra-uterine transfer  technique (IUT) different from it?  **OR**  Write the location and functions of myometrium and endometrium. | | | | | | 2 |
|  | **SECTION -C** | | | | | | 3\*6 |
| **15** | “Blood of a man is tested positive for the Image “X” given below.    **Image: X**  a. What are these?  b. From where are these extracted naturally?  c. Which part of the body is affected by these? | | | | | | 3 |
| **16** | a. Identify the parts A, D,E and F in the diagram of an antibody molecule given below:    2. Select the odd one out  Malaria, Gonorrhea, Amoebiasis, Filariasis | | | | | | 3 |
| **17** | a) Mention the problems that are taken care of by Reproduction and Child Health care programme.  b) What is amniocentesis and why there is statutory ban on it? | | | | | | 3 |
| **18** | Name the part of the female reproductive system where the embryo is implanted. Mention the type of tissue which it is made up of and give their functions? | | | | | | 3 |
| **19** | (a) How are parthenocarpic fruits produced by some plants and apomictic seeds by some  others? Explain.  (b)When do farmers prefer using apomictic seeds?  **OR**  Draw a diagram of L.S. of an anatropous ovule of an angiosperm and label any 6 parts  other than the gametophyte. | | | | | | 3 |
| **20** | How does RNA interference help in developing resistance in tobacco plant against nematode infection?  **OR**  Lipoprotein lipase deficiency (LPLD)is a genetic disorder in which a person has a defective gene for lipase. This leads to high triglycerides, stomach pain, fat deposits under the skin. It may eventually affect the liver, pancreas and may also cause diabetes. The disorder occurs if a child acquires defective genes from both parents (autosomal recessive). ERT (enzyme replacement treatment) is one of the treatments offered to patients with LPLD.  a) (i) What procedure is followed in ERT?  (ii) What could be one possible drawback of ERT?  b) How can LPLD be treated using Biotechnology? Elaborate. | | | | | | 3 |
|  | **SECTION -D** | | | | | | 4\*1 |
| 21 | Q. No. 21 is a case-based questions which has 4 subparts with internal choice in one subpart. | | | | | |  |
| . | Read the following and answer any four questions from (i) to (v) given below:  A technique known as amniocentesis is used to determine fetal abnormalities. This test is based on the chromosomal pattern in amniotic fluid. However, this technique is legally banned now.    (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**  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 | Mention the role of gonadotropins in menstrual cycle. On what day of the menstrual cycle do the gonadotropins reach a peak?  **OR**  Draw self-explanatory schematic representation of oogenesis**.** | | | | | | 5 |
| 23 | (i) What precaution(s) would you recommend to a patient requiring repeated blood transfusion?  (ii) If the advice is not followed by the patient there is an apprehension that the patient might contract a disease that would destroy the immune system of his/her body. Explain with the help of schematic diagram only how the immune system would get affected and destroyed.  **OR**  Identify and name the disease in which the patient’s cells lose the property of  contact inhibition. State its possible causes and explain any three methods to  accurately detect the pathological and physiological changes that take place due  to the disease in living tissues. | | | | | | 5 |

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