**INDIAN SCHOOL AL WADI AL KABIR**
**SAMPLE PAPER I (2021-2022)**
**TERM I-BIOLOGY (044)**

**CLASS: XII** **Max. Marks: 35**
**Time: 90 Minutes**

**General Instructions:**
**1. The Question Paper contains three sections.**
**2. Section A has 13 questions.**
**3. Section B has 13 questions.**
**4. Section C has 9 questions.**
**5. All questions are compulsory and carry equal marks.**

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| | **SECTION A**<br>Section – A consists of 13 questions. | |
| **Sl. No.** | | |
| 1 | Replication fork is the junction between the two _____<br>a) Unreplicated DNA<br>b) Newly synthesized DNA<br>c) Newly separated DNA strands and newly synthesized DNA strands<br>d) Newly separated DNA strands and the unreplicated DNA | |
| 2 | Sickle cell anemia is caused<br><br>a) When valine is replaced by glutamic acid in beta polypeptide chain<br><br>b) When glutamic acid is replaced by valine in beta polypeptide chain<br><br>c) When glutamic acid is replaced by valine in alpha polypeptide chain<br><br>d) When valine is replaced by glutamic acid in alpha polypeptide chain | |
| 3 | A bilobed dithecous anther has 500 microspore mother cells per microsporangium. How many male gametophytes can this anther produce?<br>a) 10,000<br>b) 25,000<br>c) 20,000<br>d) 8,000 | |

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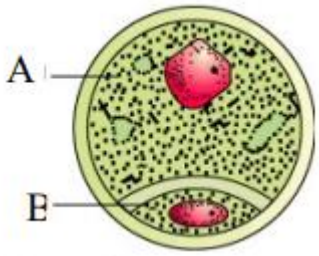
| 4 | Which of the following approaches does not give the defined action of contraceptive?<br>(a) Vasectomy Prevents spermatogenesis<br>(b) Barrier methods Prevent fertilization<br>(c) Intra-uterine devices Increases phagocytizes of sperms, suppress sperm motility and fertilizing capacity of sperms<br>(d) Hormonal contraceptives Prevent /related entry of sperms, prevent ovulation and fertilization | |
| 5 | Which of the following combination of chromosome number represents the correct sex determination pattern in honey bee?<br>a) Males=32, Females=16<br>b) Males=16, Females=32<br>c) Males=31, Females=32<br>d) Females=32, Males=30 | |
| 6 | Which of the following possess Homogametic male?<br>a) Plants<br>b) Birds<br>c) Insects<br>d) Man | |
| 7 | Identify 'A' and 'B' in the following diagram of a mature pollen grain.<br>  <br><br>a) A- Generative cell B- Vegetative cell<br>b) A- Vegetative cell B- Generative cell<br>c) A- Vacuole B- Nucellus<br>d) A- Nucleus B- Vacuole | |
| 8 | The function of tapetum in microsporangium is.<br>a) It nourishes the developing pollen grains.<br>b) It performs the function of protection.<br>c) It helps in dehiscence of anther to release pollen grains.<br>d) It undergoes meiotic divisions to form microspore tetrads. | |
| 9 | The meiocyte of rice has 24 chromosomes. The number of chromosomes in its endosperm is<br>a) 24<br>b) 12<br>c) 48<br>d) 36 | |
| 10 | Which of the following will not result in variations among the siblings?<br>a) Independent assortment<br>b) Crossing over<br>c) Linkage<br>d) Mutations | |

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| 11 | Which is the correct complementary strand for AGAATTCGC?<br>a) CTCCGGATA<br>b) GAGGCCTAT<br>c) TCTTAAGCG<br>d) GTGGCCATA | |
| 12 | Which of the following methodology is used to identify all the genes that are expressed as RNA in Human Genome Project (HGP)?<br>a) Sequence Annotation<br>b) Expressed Sequence Tags<br>c) Karyotyping<br>d) Autoradiography | |
| 13 | Which of the following statements is true for a filiform apparatus?<br>a) It is located at the chalazal end.<br>b) It is located at the micropylar end.<br>c) They play an important role in guiding the pollen tubes into the synergid.<br>d) Both (b) and (c) | |
| | **SECTION B**<br>Section - B consists of 13 questions | |
| 14 | **Assertion:** Exine is made up of sporopollenin.<br>**Reason:** Pollen grains are well preserved as fossils.<br>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.<br>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.<br>(c) Assertion is true but reason is false.<br>**(d)** Both assertion and reason are false | |
| 15 | **Assertion:** Lactational amenorrhea is a natural method of contraception.<br>**Reason:** Ovulation does not take place during the period of intense lactation following child birth.<br>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.<br>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.<br>(c) Assertion is true but reason is false.<br>(d) Both assertion and reason are false | |
| 16 | **Assertion:** The law of Independent Assortment can be studied by means of Dihybrid cross.<br>**Reason:** The law of Independent assortment is applicable only to linkages.<br>(a) Both assertion and reason are true, and reason is the correct explanation of assertion.<br>(b) Both assertion and reason are true, but reason is not the correct explanation of assertion.<br>(c) Assertion is true but reason is false.<br>(d) Both assertion and reason are false | |
| 17 | Choose the incorrect statement. | |

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| | a) The hollow foliar structure that encloses the leaf primordia in a grass embryo is called coleoptile<br>b) In apple, the thalamus also contributes to fruit formation and becomes edible.<br>c) In Zostera, the pollen grains are long and ribbon-like and released inside the water.<br>d) Sepals and petals are concealed in entomophilous flowers | |
| 18 | Hormones secreted by placenta to maintain pregnancy are<br>a. hCG, hPL, progestogen, prolactin<br>b. hCG, progestogen, oestrogen, glucocorticoids<br>c. hCG, hPL, progestogen, oestrogen<br>d. hCG, hPL, oestrogen, relaxin, oxytocin | |
| 19 | Progestin- estradiol combined contraceptive pills inhibit ovulation by:<br>(a) Negative feedback on the release of estrogen from ovary required for follicular development in follicular phase<br>(b) Preventing the uterine physiological and morphological changes required for implantation<br>(c) Inhibiting the secretion of FSH and LH that are necessary for ovulation<br>(d) Both (a) and (c) | |
| 20 | DNA finger printing is a technique in molecular biology. Arrange the following steps in sequence.<br>1) Blotting of DNA fragment to nitro cellulose.<br>2) Digestion of DNA by restriction endonuclease.<br>3) Autoradiography<br>4)Isolation of DNA.<br>5) separation of DNA fragments by electrophoresis.<br>a) 4 2 1 5 3<br>b) 3 1 4 5 2<br>c) 4 3 5 1 2<br>d) 4 2 5 1 3 | |
| 21 | The Chromosome movement during meiosis has been worked out and noted that behavior of genes was parallel to the behavior of chromosomes<br>a) Schledien<br>b) Morgan<br>c) Sturtevant<br>d) Sutton and Boveri | |
| 22 | Arrange the following events in the order of synthesis of a protein<br><br>i) A peptide bond forms<br><br>ii) A tRNA matches its anticodon to the codon in the A- site<br><br>iii) The movement of second tRNA complex from A-site to P-site<br><br>iv) The large subunit attaches to the small subunit and the initiator tRNA fits in the P-site<br><br>v) A small subunit binds to the mRNA | |

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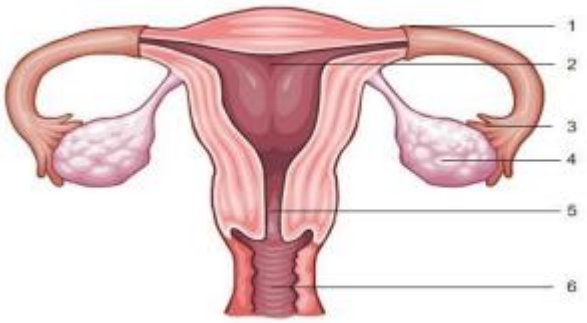
| | vi) The activated amino acid tRNA complex attaches the initiation codon on mRNA<br><br>a) iv, v, iii, ii, i, vi<br>b) iv, vi, v, ii, I, iii<br>c) v, iv, iii, ii, vi, I<br>d) v, vi, iv, ii, i, iii | |
| 23 | Parents having genotype $I^A$ $I^B$ would show the blood group as AB. This is because of<br>a) Pleiotropy<br>b) Co-dominance<br>c) Segregation<br>d) Incomplete Dominance | |
| 24 | Which of the following combination is a correct observation for the transformation experiment performed by Griffith?<br>a) Type IIIS (living) + mouse = dead<br>b) Type IIIS (heat killed) + mouse = dead<br>c) Type IIR (living) + mouse = dead<br>d) Type IIIS (heat killed) + type IIR (living) + mouse = living | |
| 25 | If the maternal grandfather of a boy is hemophilic, maternal grandmother is normal and father is normal then what are the chances that he could have hemophilia disease?<br>(a) 25 %<br>(b) 50 %<br>(c) 75%<br>(d) 0% | |
| 26 | The significant aspect of reverse transcription is<br>(a) the flow information from DNA to RNA<br>(b) the flow information from RNA to DNA<br>(c) the flow information from RNA to proteins<br>(d) both a and c | |
| | **SECTION C**<br>Section-C consists of one case followed by 5 questions linked to this case (Q.No.27 to 31). Besides this, 4 more questions are there. | |
| Case | Read the following and answer the i to v questions: Human female reproductive system consists of a pair of ovaries, accessory glands, ducts associated with formation of gametes and production of sex hormones. Study the figure and answer the following questions<br>  <br> | |

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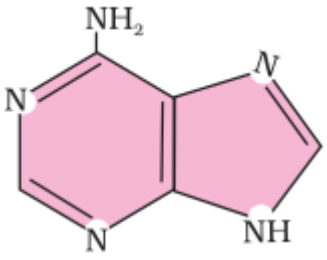
| 27 | Which of the following is correct for labelled part 3?<br>a. connects ovary to uterus<br>b. collects ovum from ovary<br>c. secretes sex hormones<br>d. both band c | |
| 28 | Identify correctly matched pair<br>a. 2–uterus<br>b. 3-ovary<br>c. 5-vagina<br>d,6-endometrium | |
| 29 | Which of the following is incorrect for 4?<br>a. they occur in pairs<br>b. both release 2 eggs every cycle<br>c. they contain gamete mother cells<br>d. they produce eggs only during reproductive phase | |
| 30 | Which structure receives egg after fertilization<br>a. 4<br>b. 6<br>c. 2<br>d. 8 | |
| 31 | **Assertion:** Infundibulum is funnel shaped part closer to ovary<br>**Reason:** The edges of infundibulum help in collection of ova after ovulation<br>a. Assertion and reason both are correct statements and reason is correct explanation for assertion<br>b. Assertion and reason both are correct statements but reason is not correct explanation for assertion<br>c. Assertion is correct statement but reason is wrong statement<br>d. Assertion is wrong statement but reason is correct statement | |
| 32 | What is the name of this nitrogenous base?<br>  <br><br>a) Adenine<br>b) Cytosine<br>c) Thymine<br>d) Guanine | |

33 Match the names of scientists in column I with their achievements in column II and choose the correct answer given below

| Column I | Column II |
|---|---|
| A) Watson and Crick | P) DNA fingerprinting |
| B) R. W. Holley | Q) Decipher genetic code |
| C) Marshal Nirenberg | R) Double helix of DNA |
| D) Jacob and Monod | S) Clover model of tRNA |
| E) Alec Jeffrey | T) Lac operon concept |

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

34 In the given diagram label the part 'X' and state its function


a) Suspensor -Protects the radicle
b) Root cap - Gives protection to the plant
c) Cotyledon - Contains reserved food material that are used by embryo
d) Coleoptile -gives protection to the radicle

35 Match the items in column I with the items in column II.

| Column I | Column II |
|---|---|
| A) Remains of nucellus in a seed | 1) scutellum |
| B) Formation of seed without fertilization | 2) perisperm |
| C) Cotyledon in the seeds of grasses | 3) polyembryony |
| D) Occurrence of more than one embryo in a seed | 4) Apomixis |

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

**ANSWER KEY**

| Question number | Correct option | Question number | Correct option |
|---|---|---|---|
| **1** | **(d)** | **19** | **(c)** |

| | | | |
|---|---|---|---|
| **2** | **(b)** | **20** | **(d)** |
| **3** | **(d)** | **21** | **(d)** |
| **4** | **(a)** | **22** | **(d)** |
| **5** | **(b)** | **23** | **(b)** |
| **6** | **(b)** | **24** | **(a)** |
| **7** | **(b)** | **25** | **(b)** |
| **8** | **(a)** | **26** | **(b)** |
| **9** | **(d)** | **27** | **(a)** |
| **10** | **(c)** | **28** | **(a)** |
| **11** | **(c)** | **29** | **(b)** |
| **12** | **(b)** | **30** | **(c)** |
| **13** | **(d)** | **31** | **(a)** |
| **14** | **(a)** | **32** | **(a)** |
| **15** | **(a)** | **33** | **(b)** |
| **16** | **(c)** | **34** | **(c)** |
| **17** | **(d)** | **35** | **(c)** |
| **18** | **(c)** | | |