SUBJECT: BIOLOGY (36) BLUE PRINT MQP - 3 2024 - 25 CLASS – II P U

Question Paper Part	Question type	Number of questions	Marks
PART – A I	MCQ	15	15
PART – A II	FILL IN THE BLANKS	05	05
PART – B III	SHORT ANSWERS (2 MARKS)	07	14
PART – C IV	SHORT ANSWERS (3 MARKS)	07	21
PART – D V	LONG ANSWERS (5 MARKS)	07	35
PART – D VI	LONG ANSWERS (5 MARKS)	03	15
	TOTAL	44	105

Chapter	No. of periods	Marks	Remember (39)				Understand (35)				Application (11)				HOTS (20)		
			MCQ	SA2	SA3	LA	MCQ	SA2	SA3	LA	MCQ	SA2	SA3	LA	MCQ	SA	LA
1. Sexual reproduction in flowering plants	12	11	1				1		1		1						1
2. Human reproduction	11	11	1						1	1	1				1		
3. Reproductive health	7	6	2	1				1									
4. Principles of Inheritance	15	13		1		1									1		1
5. Molecular basis of Inheritance	15	13		1		1				1					1		
6. Evolution	8	7	1	1			1		1								
7. Human health and disease	13	11				1				1					1		
8. Microbes in Human welfare	8	7	1	1							1		1				
9. Biotechnology: Principles and Processes	8	7	1											1	1		
10. Biotechnology and its applications	7	6			1		1	1									
11. Organism and population	6	5															1
12. Ecosystem	5	4					1		1								
13. Biodiversity and Conservation	5	4	1		1												
Total	120	105	08	05	02	03	04	02	04	03	03	00	01	01	05	00	03

II P U QUESTION PAPER PATTERN

1. The Question paper consists of parts A, B, C, D and E
2. Part A - I consists of 15 Multiple choice questions, Part A – II consists of 5 fill up the blanks questions
3. All the questions of Part A – I and II are to be answered compulsorily
4. Part B consists of 7 short answer type questions carrying 2 marks each, out of which 5 questions to be answered
5. Part C consists of 7 short answer type questions carrying 3 marks each, out of which 5 questions to be answered
6. Part – D consists of V and VI. Part D – V consists of 7 long answer type questions carrying 5 marks each, out of which 4 questions to be answered. Part D – VI consists of 3 long answer type questions carrying 5 marks each, out of which 1 question to be answered.
7. Part – E is for visually challenged students only and is to be included at the end of question number 44

GENERAL GUIDELINES FOR SETTING THE QUESTION PAPER

1. The questions should be simple and unambiguous
2. The answers for the questions should be available in the prescribed text book or can be derived from the concepts of text book for application/reasoning/analytical/HOT questions
3. In part D, VI only questions of Higher Order Thinking Skills to be framed.
4. The question paper should be prepared on the individual blue print on the basis of weightage of marks fixed for each chapter and units
5. At least one question carrying 1mark, 2 marks, 3 marks and 5 marks have to be derived from each chapter wherever possible
6. When a question carrying 3 or 5 marks is split the sub questions should be derived from the same concept or different concepts of same chapter
7. Please avoid questions like explain with a neat labeled diagram. Frame questions only to expect neat labeled diagram
8. A variation of 1% weightage per objective of questions is allowed
9. Variation of 1 mark in each chapter or unit weightage is permitted while preparing the blue print and the total marks should not exceed 105.

GOVERNMENT OF KARNATAKA

KARNATAKA SCHOOL EXAMINATION AND ASSESEMENT BOARD

MODEL QUESTION PAPER – 3 (2024 – 25)

II PU SUBJECT – BIOLOGY (36)

Duration: 3hr **Max. Marks: 70**

General Instructions:

This Question paper consists of parts A, B, C, D, E

Part – A consists of I and II and Part D consists of V and VI

All the parts are compulsory

The answers for Part – A written in the first two pages of the answer booklet are only considered for evaluation

Part – E consists of questions for visually challenged students only

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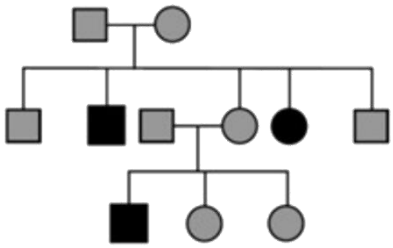
PART- A

I. Select the correct alternative from the choices given below: **15 x 1=15**

1. The Ploidy of Perisperm present in beet seed is
   a) Haploid b) Diploid
   c) Tetraploid d) Triploid
2. Some plants such as *Viola* (common pansy), *Oxalis* and *Commelina* produce two types of flowers namely
   a) Chasmogamous and Xenogamous b) Cleistogamous and Geitonogamous
   c) Geitonogamous and Xenogamous d) Chasmogamous and Cleistogamous
3. The correct sequence of embryonic development in angiosperm is
   a) Zygote → Globular → Pro –embryo → Heart shaped → Mature embryo
   b) Zygote → Heart shaped → Pro –embryo → Globular → Mature embryo
   c) Zygote → Pro –embryo → Globular → Heart shaped → Mature embryo
   d) Zygote → Globular → Heart shaped → Pro –embryo → Mature embryo
4. During pregnancy the foetus develops limbs and digits
   a) After three weeks b) after eight weeks
   c) After six weeks d) after nine weeks
5. In spermatogenesis, if FSH hormone is not secreted from the anterior pituitary gland, which stage is affected
   a) Formation of primary spermatocyte b) formation of spermatozoa
   c) Formation of spermatid d) formation of secondary spermatocyte
6. To produce 2000 sperm and 400 ova, how many spermatogonia and oogonia are required?
   a) 500 spermatogonia and 200 oogonia b) 500 spermatogonia and 400 oogonia
   b) 250 spermatogonia and 250 oogonia d) 250 spermatogonia and 400 oogonia
7. Which among the following sexually transmitted infection (STIs) are not curable
   a) Gonorrhoea, syphilis, hepatitis-B
   b) Chlamydiasis, genital warts, trichomoniasis
   c) Gonorrhea, HIV infection, chlamydiasis
   d) Hepatitis –B, genital herpes and HIV infection

8. A pedigree chart is given below, identify the trait responsible for this inheritance pattern



a) Autosomal dominant trait b) Autosomal recessive trait
c) X- linked recessive trait d) X – linked dominant trait

9. In Lac –operon, if mutation occurs in the Z – gene
a) Transacetylase will not be synthesized
b) β- galactosidase will not be synthesized
c) Permease will not be synthesized
d) Lactose digestion will be rapid

10. Match the type of Man with their origin periods and choose the correct answer

Column I	Column II
A. Ramapithecus	i) 1.5 mya
B. Australopithecines	ii) 15 mya
C. Homo erectus	iii) 1, 00, 000 -40,000 years back
D. Neanderthal man	iv) 2 mya
	v) 3 mya

a) A-i, B -iv, C –iii, D-ii b) A –ii, B- iv, C-i, D – iii
c) A –iii, B- i, C-iv, D- v d) A- iv, B –ii, C –iii, D – v

11. Now a days diseases like dengue and chikungunya are widespread in different parts of India, to prevent the spread of the disease which vector has to be eliminated
a) Culex b) Anapheles
c) Female anopheles d) Aedes

12. If a patient has undergone myocardial infraction leading to heart attack, to remove clots from the blood vessels of patient, which enzyme is used by the doctor to treat the patient
a) Pectinase b) streptokinase
c) Protease d) lipase

13. A piece of alien DNA cannot multiply itself in the progeny cells of the organism due to
a) Lack of ori- site b) Denaturation
c) Renaturation d) Incompatibility

14. Hind II cuts DNA molecule by recognizing a specific recognition sequence of
a) 3 base pairs b) 6 base pairs
c) 8 base pairs d) 10 base pairs

15. Given below is a portion of DNA strand giving the base sequence on the opposite strand, what is so special shown in it?

5′-----GAATTC------3′
3′-----CTTAAG------5′

a) Replication completed b) Deletion mutation
c) Start codon at the 5′ d) Palindromic sequence

II. Fill in the blanks by choosing the appropriate word/ words from those given below (5x1=5)

(Saccharomyces cerevisiae, Adaptive radiation, Hormone releasing IUDs, RNA interference, sacred groves, Bacteria)

16. _____make the uterus unsuitable for implantation and the cervix hostile to the sperm.
17. The process of evolution of different species in a given geographical area starting from a point and literally radiating to other areas of geography (habitats) is called _____
18. _____is used for fermenting malted cereals and fruit juices, to produce ethanol.
19. The phenomenon of silencing of a specific mRNA due to a complementary dsRNA molecule that binds to mRNA and prevents translation is _____.
20. _____ are the tracts of forest were set aside and all the trees and wildlife within were venerated and given total protection.

PART -B

III. Answer any five the following questions in 3-5 sentences wherever applicable: 5 x 2 =10

21. What are emergency contraceptives? Write their hormonal combination.
22. List the measure to check the population growth rate.
23. What is haplo-diploid sex determination mechanism? Mention an animal which exhibits this.
24. Write a note on the role of sigma factor and the rho factor in transcription in prokaryotes.
25. Mention the evolutionary significance of the following organisms.
    a) Shrews b) Lobefins
26. Write the role of Cyanobacteria that act as biofertilisers.
27. ELISA is one of the methods of molecular diagnosis, what is the principle of this technique? Name the disease which can be detected by this method.

PART –C

IV. Answer any five of the following question in 40-80 sentences wherever applicable: 5x3=15

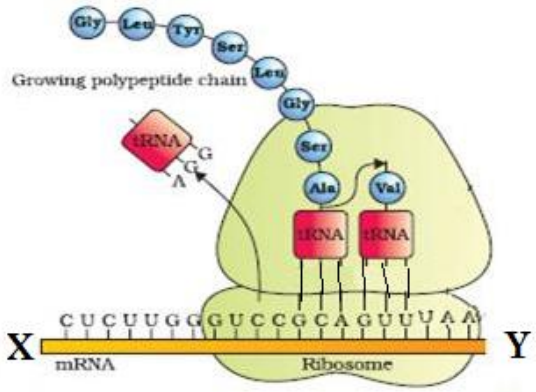
28. Draw a labelled diagram of Transverse section of young anther.
29. During pregnancy the level of hormones are increase several fold in the maternal blood. Name the hormones and write their importance.
30. Draw a labelled diagram of Miller's experimental set up.
31. The use of biocontrol measures will greatly reduce our dependence on toxic chemicals and pesticides. Justify with an example.
32. What is Gene therapy? Write the steps involved in curing ADA deficiency by gene therapy.
33. Pyramid of energy is always upright, can never be inverted. Give reasons.
34. There are many reasons for conserving biodiversity. Briefly explain the reason for conserving biodiversity from the narrowly utilitarian point of view.

PART- D

V. Answer any four of the following questions in about 200 -250 words each, wherever applicable: 4 x 5=20

35. Draw a neat labelled diagrammatic sectional view of male reproductive system.
36. a) Define aneuploidy. Give two examples of aneuploidy. (2M)
    b) Mention the karyotype of Klinefelter's syndrome of an affected individual and write its symptoms. (3M)

37.



a) Identify the polarity of X and Y in the above given diagram and how many more amino acids are expected to be added to this elongating polypeptide chain (2M)

b) Which sequences of bases are generally found at the X and Y polarity? (1M)

c) Mention the anticodon for alanine and valine amino acids based on the diagram (1M)

d) What is the composition of the catalyst involved in the peptide bond formation in this process? (1M)

38. List the salient features of Human Genome.

39. What are lymphoid organs? Write the functions of the following in response to Immune system in our body.

a) Bone marrow b) Thymus c) Spleen d) Lymph nodes.

40. Explain different techniques which help in cancer detection and diagnosis.

41. a) Write three vector free techniques that can be utilized to transfer recombinant DNA into a ready host cell. (3M)

b) *Agrobacterium tumifaciens* act as natural vector for cloning genes in plants. Substantiate. (2M)

VI. Answer any one of the following questions in about 200 -250 words each, wherever applicable: **1 x 5 = 5**

42. Picture related to pollination is given below:

a) Will this pollination confirms fertilization? (2M)

b) What are the floral rewards provided by the plants to the insects to revisit? (1M)

c) Mention the characteristics of flower in this pollination other than floral rewards (2M)

43. Thalassemia is a quantitative problem of synthesizing globin. Explain in detail with respect to the chromosome, number of genes and alleles and the features.

44. a) Predators are 'Prudent and conduits' in Nature. Support your answer by giving reason. (3M)

b) To lessen the impact of predation, prey species have evolved different defensive methods in plants and animals, support your answer by giving one example each for a plant and an animal. (2M)

PART – E

(FOR VISUALLY CHALLENGED STUDENTS ONLY)

8. Which of the following is not a recessive gene linked disorder (1M)

a) Myotonic dystrophy b) Sickle cell anaemia

c) Haemophilia d) Colourblindness

37. Explain the aminoacylation of tRNA and formation of initiation complex in translation. (5M)

42. What is pollination? Write the characteristics of insect pollinated flowers. (5M)

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