



BOARD KCET PYQ (2025)

Kannada

BOTANY

1. When pollen grains of a flower of a plant pollinate the stigma of flower of another plant, it is called

[KCET 2025]

- (A) Autogamy
- (B) Dichogamy
- (C) Geitonogamy
- (D) Xenogamy

2. Fusion of a male gamete with the central cell in the embryo sac of an angiosperm is called

[KCET 2025]

- (A) Triple fusion
- (B) Syngamy
- (C) Apomixis
- (D) Double fertilization

3. Which of these options is true in the context of the above diagram of pollen grain?

[KCET 2025]

- (A) 'A' is a vegetative cell which gives rise to male gametes and 'B' is a generative cell which produces pollen tube
- (B) 'A' is a generative cell which gives rise to pollen tube and 'B' is a vegetative cell which form male gametes
- (C) 'A' is a vegetative cell with abundant food reserve and 'B' is a generative cell which form male gametes
- (D) 'A' is a generative cell which forms male gametes and 'B' is a vegetative cell which produces pollen tube

4. How many types of gametes will be formed by a parent with genotype 'AaBbCc'?

[KCET 2025]

- (A) 4
- (B) 8
- (C) 12
- (D) 6

5. When a single gene exhibits multiple phenotypic expression, the phenomenon is called:

[KCET 2025]

- (A) Incomplete dominance
- (B) Pleiotropy
- (C) Co-dominance
- (D) Polygenic inheritance

6. A colourblind man marries a carrier woman. The percentage of their colourblind progeny in the next generation will be:

[KCET 2025]

- (A) 50 %
- (B) 75 %
- (C) 100 %
- (D) 25 %

7. Identify which one of the given pair of options is **correct** with respect to Down's syndrome and Turner's syndrome.

[KCET 2025]

Option	Down's syndrome symptoms	Turner's syndrome symptoms
(a)	Short-statured individual	Gynaecomastia in man
(b)	Round head, partially open mouth	Overall masculine development
(c)	Broad palm, physical and mental development retarded	Sterile females with rudimentary ovaries
(d)	Additional copy of an X-chromosome	Absence of an X-chromosome

- (A) b
- (B) c
- (C) d
- (D) a

8. RNA polymerase II is responsible for the transcription of



[KCET 2025]

- (A) rRNA (B) hnRNA
(C) snRNA (D) tRNA

9. Which of the following enzymes increases the permeability of the bacterial cell to lactose?

[KCET 2025]

- (A) Permease (B) Transacetylase
(C) Amylase (D) β -galactosidase

10. Which of the following statements are correct with reference to prokaryotic genome?

[KCET 2025]

- (a) Monocistronic structural genes
(b) Introns absent in structural genes
(c) Transcription and translation are coupled processes
(d) Primary transcript undergoes splicing
(e) Only one RNA polymerase is present
(A) Only b, c and e are correct
(B) Only a, d and c are correct
(C) Only a, b and c are correct
(D) Only a, b and d are correct

11. The drug prescribed to the patients who have undergone organ transplant is and is produced by

[KCET 2025]

- (A) Stain, *Monascus purpureus*
(B) Cyclosporin-A, *Trichoderma polysporum*
(C) Statin, *Trichoderma polysporum*
(D) Cyclosporin-A, *Monascus purpureus*

12. Read the following statements and select the correct option

[KCET 2025]

Statement I: Biocontrol refers to the use of biological methods for controlling plant diseases and pests.

Statement II: *Trichoderma* species are effective biocontrol agents for several plant pathogens

- (A) Both statement I and statement II are incorrect
(B) Statement I is incorrect but statement II is correct
(C) Both statement I and statement II are correct

(D) Statement I is correct and statement II is incorrect

13. Match the column-I with Column-II. Choose the correct option given below. [KCET 2025]

Column-I		Column-II	
(a)	<i>Streptococcus</i>	i.	Free living nitrogen fixing bacteria
(b)	<i>Penicillium</i>	ii.	Clot buster
(c)	<i>Methanogens</i>	iii.	Source of antibiotic
(d)	<i>Anabaena</i>	iv.	Biogas production

- (A) a-ii, b-iv, c-iii, d-i
(B) a-iv, b-iii, c-I, d-ii
(C) a-iv, b-I, c-iii, d-ii
(D) a-ii, b-iii, c-iv, d - i

14. Which one of the following population attributes, contributes to increase in population density?

- (A) Mortality and Emigration
(B) Natality and Emigration
(C) Mortality and Immigration
(D) Natality and Immigration

15. If 8 individuals in a laboratory population of 80 fruit flies died during a specified time interval, the death rate in the population during that period is:

[KCET 2025]

- (A) 0.001 individual/time interval
(B) 0.1 individual/time interval
(C) 1 individual/time interval
(D) 0.01 individual/time interval

16. Choose the correct sequence of steps involved in decomposition

- (A) Fragmentation $\rightarrow$ Leaching $\rightarrow$ Catabolism $\rightarrow$ Mineralisation $\rightarrow$ Humification
(B) Fragmentation $\rightarrow$ Mineralisation $\rightarrow$ Humification $\rightarrow$ Leaching $\rightarrow$ Catabolism
(C) Fragmentation $\rightarrow$ Leaching $\rightarrow$ Catabolism $\rightarrow$ Humification $\rightarrow$ Mineralisation.



(D) Fragmentation → Catabolism → Leaching → Humification → Mineralisation

17. With respect to limitation of Ecological pyramids, which of the following statements are correct?

- It does not take into account the same species belonging to two or more trophic levels.
- It assumes a simple food chain, something that almost never existed in nature.
- It accommodates saprophytes
- It does not accommodate a food web

Choose the **correct** answer from the options given below.

[KCET 2025]

- (A) b and c (B) c and d
(C) a, b and d (D) a and b

18. The 'Sixth Extinction' of species, presently in progress, is times faster than the previous five episodes of mass extinctions.

[KCET 2025]

- (A) 100 to 1000
(B) 1000 to 10000
(C) 1 to 10
(D) 10 to 100

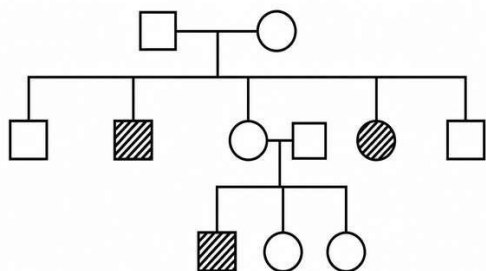
19. Species diversity _____, as we move away from the _____ towards

[KCET 2025]

- (A) Decreases, Equator, Poles
(B) Decreases, Poles, Equator
(C) Stable, Equator, Poles
(D) Increases, Equator, Poles

20. In a practical examination, the following pedigree chart was given as a spotter for identification. The students identify the given pedigree chart as

[KCET 2025]



- (A) Autosomal recessive
(B) Sex-linked dominant
(C) Sex-linked recessive
(D) Autosomal dominant

21. A student observed the T.S. of a plant organ slide under microscope. He observed the vascular bundles in the stelar region as conjoint collateral and open. Based on these features of vascular bundle, identify the **correct** option from below.

[KCET 2025]

- (A) Dicot Stem (B) Monocot Root
(C) Monocot Stem (D) Dicot Root

22. A student observed the slide of mitosis under the microscope and observed that the chromosomes were placed at the opposite poles. Which stage was the student observing?

[KCET 2025]

- (A) Anaphase (B) Metaphase
(C) Telophase (D) Prophase

23. Identify the incorrect statement with respect to the rules of Binomial Nomenclature.

- (A) Biological names are generally in Latin or Latinised irrespective of their origin
(B) Biological names are underlined separately when handwritten
(C) Biological names are printed in Italics to indicate their non-Latin origin
(D) The first word represents the genus while second component denotes the specific epithet

24. Match Column-I with Column-II and choose the correct option given below:

[KCET 2025]

Column-I (Bacteria)	Column-II (Shape)	
a. Coccus	i.	Rod-shaped
b. Bacillus	ii.	Spiral
c. Vibrium	iii.	Spherical
d. Spirillum	iv.	Comma-shaped

- (A) a-iii, b-i, c-iv, d-ii
(B) a-iii, b-ii, c-iv, d-i
(C) a-iv, b-iii, c-ii, d-i



(D) a-iv, b-i, c-ii, d-iii

25. Read the given statements and choose the **correct** option :

[KCET 2025]

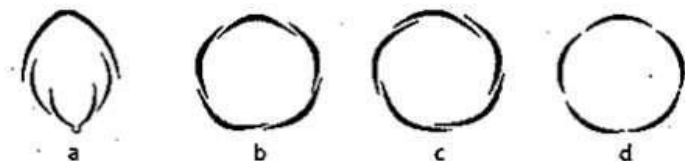
Statement I : Gemmae are green, unicellular, sexual buds which develop in receptacles called gemma cups.

Statement II: Protonema develops directly from a spore

- (A) Statement I is true but Statement II is false
(B) Statement I is false but Statement II is true
(C) Both Statement I and Statement II are false
(D) Both Statement I and Statement II are false

26. Identify the types of aestivation in corolla labeled as 'a', 'b', 'c' and 'd'

[KCET 2025]



- (A) a-Imbricate, b-Valvate, c-Vexillary, d-Twisted
(B) a-Vexillary, b-Imbricate, c-Twisted, d-Valvate
(C) a- Vexillary, b-Imbricate, c- Valvate, d-Twisted
(D) a-Vexillary, b-Twisted, c-Imbricate, d-Valvate

27. Match the Column-I with Column-II and choose the **correct** option:

[KCET 2025]

Column-I (Characteristics of vascular bundle)	Column-II (Transverse section)
a. Radial, tetrarch, cambial ring between xylem and phloem at later stages	i. T.S of monocot stem
b. Conjoint, open and endarch	ii. T.S of dicot root
c. Radial, polyarch, large pitch without cambial ring	iii. T.S of dicot stem

d. Conjoint, closed with sclerenchymatous bundle sheath	iv. T.S of dicot stem
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- (A) a-ii, b-iii, c-iv, d-i
(B) a-ii, b-iv, c-iii, d-i
(C) a-iii, b-iv, c-i, d-ii
(D) a-i, b-ii, c-iii, d-iv

28. The reserve material in prokaryotic cells are stored in the cytoplasm in the form of

[KCET 2025]

- (A) Inclusion bodies
(B) Exclusion and inclusion bodies
(C) Fat bodies
(D) Exclusion bodies

29. The cell wall less prokaryote among the following is:

[KCET 2025]

- (A) Blue-Green Algae
(B) Cyanobacteria
(C) Mycoplasma
(D) Bacteria

30. Match the stages of prophase I given in Column-I with their features in Column-II and choose the **correct** options from the choices given below:

[KCET 2025]

	Column -I		Column -II
(a)	Leptotene	(i)	Exchange of genetic materials between non-sister chromatids of the homologous chromosomes
(b)	Zygotene	(ii)	Chromosomes visible under light microscope
(c)	Pachytene	(iii)	Dissolution of synaptonemal complex
(d)	Diplotene	(iv)	Chromosomes start pairing together
(e)	Diakinesis	(v)	Terminalisation of chiasmata

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



31. Read the given statements and choose the correct option:

[KCET 2025]

Statement I: In Calvin cycle, Carboxylation is catalysed by PEP Carboxylase.

Statement II: In Hatch-Slack pathway, Carboxylation is catalysed by RuBP Carboxylase.

- (A) Statement I is true but Statement II is false
 (B) Statement I is false but Statement II is true
 (C) Both Statement I and Statement I are false
 (D) Both Statement I and Statement II are true
32. The TCA cycle starts with the condensation of acetyl group with

[KCET 2025]

- (A) Citric acid
 (B) α -Ketoglutaric acid
 (C) Succinic acid

- (D) Oxaloacetic acid

33. Match the plant growth hormones of Column-I with suitable chemical derivatives present in Column-II and choose the **correct** option given below:

[KCET 2025]

	Column - I		Column -II
(a)	Abscisic acid	(i)	Adenine derivative
(b)	Gibberellins	(ii)	Indole acetic acid
(c)	Kinetin	(iii)	Carotenoid derivative
(d)	Auxin	(iv)	Terpens

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

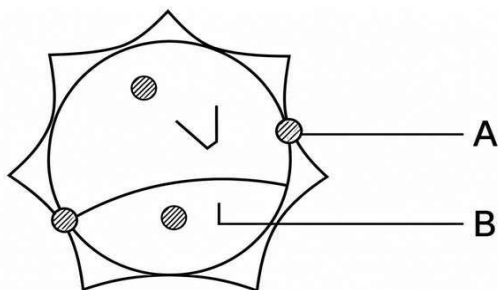


Hint & Solution

1. (D)

Xenogamy is transfer of pollen grains from flower of one plant to stigma of flower of another plant. It occurs between genetically different plants of same species. This type of pollination promotes genetic variation. It is a true type of cross-pollination. Autogamy and geitonogamy occur within same plant.

2. (A)



One male gamete fuse with two polar nuclei in central cell. This forms the primary endosperm nucleus. Three haploid nuclei participate in fusion. Hence the process is called triple fusion. It is a component of double fertilization.

3. (C)

Vegetative cell is larger and contains abundant food reserve. It forms pollen tube during germination. Generative cell lies within vegetative cell cytoplasm. Generative cell divides to produce two male gametes. Thus A is vegetative cell and B is generative cell.

4. (B)

The number of gametes formed by an individual is given by 2^n , where n is the number of heterozygous gene pairs. Since $AaBbCc$ has 3 heterozygous pairs, the number of gametes is $2^3 = 8$.

5. (B)

Pleiotropy occurs when one gene affects multiple traits. A single gene shows several phenotypic expressions. Effects may appear in different

organs or pathways. Phenylketonuria is an example of pleiotropy. Thus, one gene controls many characters.

6. (A)

Colour blindness is an X-linked recessive disorder. Cross: $X^cY \times X^N X^c$. Possible offspring are normal female, carrier female, colourblind male and colourblind female. Two out of four progeny become colourblind. Hence probability is 50%.

7. (B)

Down's syndrome results from trisomy of chromosome 21. Affected individuals show broad palm and retarded development. Turner's syndrome occurs due to absence of one X chromosome. Affected females possess rudimentary ovaries and sterility. Thus, option (c) is correctly matched.

8. (B)

RNA polymerase II synthesises heterogeneous nuclear RNA. hnRNA acts as precursor of mRNA in eukaryotes. RNA polymerase I synthesises rRNA. RNA polymerase III synthesises tRNA. Thus polymerase II transcribes hnRNA.

9. (A)

Permease increases membrane permeability to lactose. It helps entry of lactose into bacterial cells. The enzyme is coded by $lac y$ gene. β -galactosidase breaks lactose into glucose and galactose. Thus, permease facilitates lactose transport.

10. (A)

Introns are absent in prokaryotic structural genes. Transcription and translation occur simultaneously. Only one RNA polymerase is present. Primary transcript usually does not undergo splicing. Thus, statements b, c and e are correct.



11. (B)
Cyclosporin-A is an immunosuppressive drug. It is used after organ transplantation. The drug prevents graft rejection. It is produced by *Trichoderma polysporum*. Thus, it is medically important fungal product.
12. (C)
Biocontrol is the use of living organisms to control plant pests and diseases instead of chemical pesticides.
Trichoderma is a beneficial fungus that suppresses several disease-causing fungi in the soil. It acts by competing for nutrients and producing antifungal substances. Hence, both statements are correct.
13. (D)
Streptococcus produces clot-buster enzymes. *Penicillium* is source of antibiotic penicillin. Methanogens participate in biogas production. *Anabaena* fixes atmospheric nitrogen. Thus, matching is a-ii, b-iii, c-iv, d-i.
14. (D)
Natality increases population size. Immigration adds individuals into population. Mortality decreases population size. Emigration removes individuals from population. Thus, natality and immigration increase density.
15. (B)
Death rate = number of deaths/total population.
Here 8 flies died out of 80.
Thus, death rate = $8/80 = 0.1$.
It is expressed per individual per time interval.
Hence answer is 0.1 individual/time interval.
16. (C)
Decomposition starts with fragmentation of detritus.
Leaching removes water-soluble nutrients.
Catabolism is carried out by microbial enzymes.
Humification forms dark-coloured humus.
Mineralisation releases inorganic nutrients.
17. (C)
Ecological pyramids assume simple food chains. They do not represent food webs accurately. Same species at different trophic levels are ignored.
Saprophytes are excluded from pyramids.
Thus, statements a, b and d are correct.
18. (A)
Present extinction rate is much higher than natural rate. Human activities are major causes of biodiversity loss. Current extinction is called sixth mass extinction. It is estimated to be 100–1000 times faster. Habitat destruction accelerates species extinction
19. (A)
Species diversity is highest near equator. It decreases towards polar regions.
Tropical regions remain climatically stable. They support greater speciation and biodiversity. Thus, diversity decreases from equator to poles.
20. (C)
Sex-linked recessive traits appear more commonly in males. Affected males inherit mutant allele from mother. Females usually act as carriers. Trait often skips generations. Thus pedigree represents sex-linked recessive inheritance.
21. (A)
Dicot stem possesses conjoint collateral open vascular bundles. Cambium is present between xylem and phloem. Bundles are arranged in ring in stelar region. Secondary growth occurs due to cambium.
Thus, the slide represents dicot stem.
22. (C)
In telophase chromosomes reach opposite poles. Nuclear membrane reappears around chromosomes. Chromosomes begin to decondense. Spindle fibres disappear gradually.



Thus, the observed stage is telophase.

23. (C)

Scientific names are printed in italics.
This is not because of non-Latin origin.
Names are generally Latin or latinised.
Genus name begins with capital letter.
Specific epithet starts with small letter.

24. (A)

Coccus bacteria are spherical. Bacillus bacteria are rod shaped. Vibrio bacteria are comma shaped. Spirillum bacteria are spiral shaped.
Thus, correct matching is a-iii, b-i, c-iv, d-ii.

25. (B)

Gemmae are multicellular asexual buds. They develop in gemma cups of Marchantia.
Thus, statement I is false. Protonema develops directly from spore in mosses. Hence statement II is true.

26. (D)

Vexillary aestivation occurs in pea family. Twisted aestivation is seen in china rose. Imbricate aestivation has irregular overlapping. Valvate aestivation shows no overlapping.
Thus, correct order is a-vexillary, b-twisted, c-imbricate, d-valvate.

27. (A)

Dicot root shows radial tetrarch bundles. Dicot stem possesses conjoint open bundles. Monocot root has radial polyarch bundles. Monocot stem has conjoint closed bundles with sclerenchymatous sheath.
Thus, matching is a-ii, b-iii, c-iv, d-i.

28. (A)

Reserve materials in prokaryotes occur as inclusion bodies.
These lie freely in cytoplasm.
They store phosphate, glycogen or lipids.
They are not membrane bound structures.
Thus, reserve materials occur as inclusion bodies.

29. (C)

Mycoplasma lacks cell wall completely.
It is the smallest living cell.
Cell membrane contains sterols.
Due to absence of wall, shape is variable.
Thus, Mycoplasma is wall-less prokaryote.

30. (C)

Leptotene shows visible chromosomes.
Zygotene involves pairing of homologous chromosomes.
Pachytene shows crossing over between non-sister chromatids.
Diplotene shows dissolution of synaptonemal complex.
Diakinesis shows terminalisation of chiasmata.

31. (C)

In Calvin cycle, carboxylation is catalysed by RuBisCO. PEP carboxylase functions in Hatch-Slack pathway. Thus, statement I is false. Statement II is also false.
Therefore, both statements are false.

32. (D)

TCA cycle begins with condensation of acetyl CoA and oxaloacetic acid. This reaction forms citric acid. The enzyme involved is citrate synthase. The cycle occurs in mitochondrial matrix. It is central pathway of aerobic respiration..



33. (B)

Absciscic acid is a carotenoid derivative.

Gibberellins are terpenes.

Kinetin is an adenine derivative cytokinin. Auxin includes indole acetic acid.

Thus, matching is a-iii, b-iv, c-i, d-ii..