

Maximum Marks: 60
Total No. of Questions: 60
Total Duration: 80 Minutes
Maximum Time for Answering: 70 Minutes
Time: 02.30 pm to 03.50 pm



Medical | IIT-JEE | Foundations

Corporate Office : AESL, 3rd Floor, Incuspaze Campus-2, Plot-13, Sector-18, Udyog Vihar,
Gurugram, Haryana-122015

B

Answers & Solutions

for

Karnataka Common Entrance Test-2025

Time : 80 Minutes

(BIOLOGY)

M.M. : 60

Dos:

- 1 This question booklet is issued to you by the room invigilator after 02.30 pm.
- 2 Check whether the CET Number has been entered and shaded in the respective circles on the OMR answer sheet.
- 3 The version code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
- 4 The Version Code and Serial Number of this question booklet should be entered on the Nominal Roll without any mistakes.
- 5 Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts:

- 1) **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
- 2) The **3rd Bell rings at 02.40 pm, till then.**
 - i. Do not remove the seal present on the right-hand side of this question booklet.
 - ii. Do not look inside this question booklet or start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

- 1 In case of usage of signs and symbols in the questions, the regular textbook connotation should be considered unless stated otherwise.
- 2 This question booklet contains 60 questions, and each question will have one statement and four different options / responses & out of which you have to choose one correct answer.
- 3 After the **3^d Bell rings at 02.40 pm**, remove the paper seal of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
- 4 Completely **darken / shade** the relevant circle with a **blue or black ink ballpoint pen against the question number on the OMR answer sheet.**
- 5 Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognized and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
- 6 Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
- 7 **Last Bell will ring at 03.50 pm**, stop writing on the OMR answer sheet,
- 8 Hand over the OMR answer sheet to the room invigilator as it is.
- 9 After separating the top sheet (Office copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you.

NOTE: In case of any discrepancy between English and Kannada Versions, the English version will be taken as final.

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1. Which of the following are the techniques for detection of cancer of internal organs?

- a) Radiography, MRI
- b) MRI, computed tomography
- c) Widal test, radiography
- d) MRI, widal test

- (1) b and c
- (2) b and d
- (3) a and b
- (4) a and c

Key: Answer (3)

Sol: 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.

2. Malignant malaria is caused by

- (1) *Plasmodium falciparum*
- (2) *Plasmodium rubrum*
- (3) *Plasmodium malariae*
- (4) *Plasmodium vivax*

Key: Answer (1)

Sol: Malignant malaria caused by *Plasmodium falciparum* is the most serious one and can even be fatal

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

- (1) Cyclosporin – A, *Trichoderma polysporum*
- (2) Statin, *Trichoderma polysporum*
- (3) Cyclosporin – A, *Monascus purpureus*
- (4) Statin, *Monascus purpureus*

Key: Answer (1)

Sol: Cyclosporin – A is extracted from *Trichoderma polysporum*

4. Read the following statements and select the correct option

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 pathogen

- (1) Statement I is incorrect but statement II is correct
- (2) Both statement I and statement II are correct
- (3) Statement I is correct and statement II are incorrect
- (4) Both statement I and statement II are incorrect

Key: Answer (2)

Sol: Biocontrol refers to the use of biological methods for controlling plant diseases and pests and *Trichoderma* species are effective biocontrol agents for several plant pathogen.

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5. Match the Column – I with Column – II, Choose the correct option given below

Column – I

a) *Streptococcus*

b) *Penicillium*

c) Methanogens

d) *Anabaena*

(1) a–iv, b–iii, c–i, d–ii

(3) a–ii, b–iii, c–iv, d–i

Column – II

i) Free living nitrogen fixing bacteria

ii) Clot buster

iii) Source of antibiotic

iv) Biogas production

(2) a–iv, b–i, c–iii, d–ii

(4) a–ii, b–iv, c–iii, d–i

Key: Answer (3)

Sol: *Streptococcus* - Clot buster

Penicillium - Source of antibiotic

Methanogens - Biogas production

Anabaena - Free living nitrogen fixing bacteria

6. Match the contents of List–I with List–II

List –I

a) Bioreactors

b) Downstream processing

c) Recombinant protein

d) PCR

Choose the correct option from the following

(1) a–i, b–ii, c–iv, d–iii

(3) a–ii, b–iv, c–i, d–iii

List –II

i) Insulin produced by rDNA technology

ii) Vessels which convert raw material into specific product

iii) Detect mutated genes in suspected cancer patient

iv) Involves separation and purification.

(2) a–ii, b–i, c–iii, d–iv

(4) a–iv, b–ii, c–iii, d–i

Key: Answer (3)

Sol: Bioreactors can be thought of as vessels in which raw materials are biologically converted into specific products. The processes that include separation and purification are collectively referred to as downstream processing. The recombinant DNA technological processes have enabled mass production of safe and more effective therapeutic drugs and protein like Genetically Engineered Insulin. PCR is being used to detect mutations in genes in suspected cancer patients.

7. The part of plasmid that codes for proteins involved in the replication of the pBR³²² Plasmid is

(1) “rop”

(3) Ori site

(2) cloning site

(4) Selectable marker

Key: Answer (1)

Sol: “rop” codes for the proteins involved in the replication of the plasmid.

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8. To isolate DNA from fungal cells, bacterial cells and plant cells, the enzymes required are respectively
- (1) Chitinase, Lysozyme and Cellulase (2) Cellulase, Protease and Lysozyme
 (3) Lysozyme, Cellulase and Chitinase (4) Lysozyme, Proteases and Ribonuclease

Key: Answer (1)

Sol: DNA isolation can be achieved by treating the bacterial cells/plant or animal tissue with enzymes such as lysozyme (bacteria), cellulase (plant cells), chitinase (fungus).

9. In mature insulin, which of the peptide is not present?
- (1) C-peptide (2) A and B peptides
 (3) A-peptide (4) B-peptide

Key: Answer (1)

Sol: This C peptide is not present in the mature insulin and is removed during maturation into insulin.

10. A scientist wants to produce virus-free plant in tissue culture. Which part of the plant will be used as an explant?
- a) mature stem b) axillary meristem
 c) apical meristem d) mesophyll cell

Choose the correct option from the following

- (1) b only (2) c and d (3) a only (4) b and c

Key: Answer (4)

Sol: Even if the plant is infected with a virus, the meristem (apical and axillary) is free of virus. Hence, one can remove the meristem and grow it *in vitro* to obtain virus-free plants.

11. Some strains of *Bacillus thuringiensis* produce proteins that kill insects. Which one of the following is not killed by proteins of *Bacillus thuringiensis*?
- (1) Cotton bollworm (2) Tapeworm
 (3) Tobacco budworm (4) Armyworm

Key: Answer (2)

Sol: Most Bt toxins are insect-group specific, whereas Tapeworm is a Platyhelminthes.

12. Which one of the following population attributes, contributes to increase in population density?
- (1) Natality and Emmigration (2) Mortality and Immigration
 (3) Natality and Immigration (4) Mortality and Emmigration

Key: Answer (3)

Sol: Natality and Immigration increases the population density

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13. 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
- (1) 0.1 individual/time interval (2) 1 individual/time interval
 (3) 0.01 individual/time interval (4) 0.001 individual/time interval

Key: Answer (1)

Sol: Death rate = $\frac{8(\text{Change in the population})}{80(\text{initial population})} = 0.1$ individual/time interval.

14. Choose the correct sequence of steps involved in decomposition
- (1) Fragmentation → Mineralisation → Humification → Leaching → Catabolism
 (2) Fragmentation → Leaching → Catabolism → Humification → Mineralisation
 (3) Fragmentation → Catabolism → Leaching → Humification → Mineralisation
 (4) Fragmentation → Leaching → Catabolism → Mineralisation → Humification

Key: Answer (2)

Sol: Fragmentation → Leaching → Catabolism → Humification → Mineralisation

15. With respect to limitation of Ecological pyramids, which of the following statements are correct?
- a) It does not take into account the same species belonging to two or more trophic levels.
 b) It assumes a simple food chain, something that almost never existed in nature.
 c) It accommodates saprophytes.
 d) It does not accommodate a food web

Choose the correct answer from the options given below.

- (1) c and d (2) a, b and d (3) a and b (4) b and c

Key: Answer (2)

Sol: Ecological pyramids does not accommodate saprophytes

16. The 'Sixth Extinction' of species, presently in progress, is ___ times faster than the previous five episodes of mass extinctions.
- (1) 1000 to 10000 (2) 1 to 10
 (3) 10 to 100 (4) 100 to 1000

Key: Answer (4)

Sol: The 'Sixth Extinction' of species, presently in progress, is 100 to 1000 times faster than the previous five episodes of mass extinctions.

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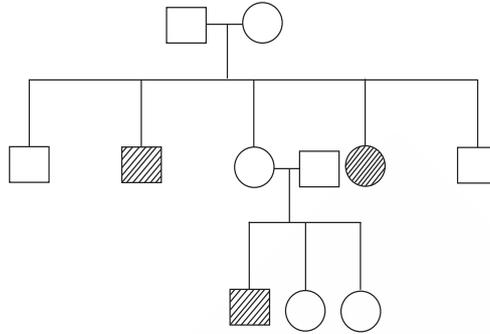
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17. Species diversity ____, as we move away from the ____ towards ____
- (1) Decreases, Poles, Equator (2) Stable, Equator, Poles
 (3) Increases, Equator, Poles (4) Decreases, Equator, Poles

Key: Answer (4)

Sol: Species diversity decreases, as we move away from the equator towards poles.

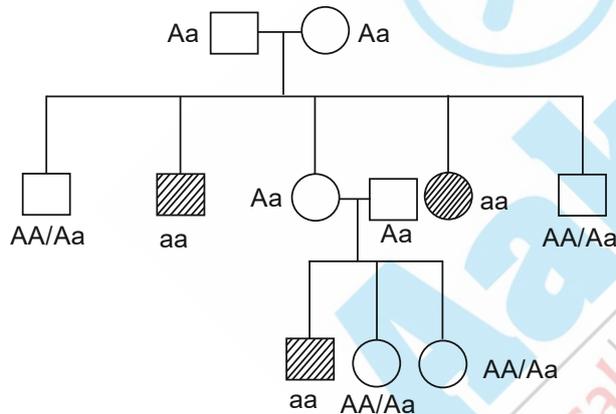
18. In a practical examination, the following pedigree chart was given as a spotter for identification. The students identify the given pedigree chart as ____



- (1) Sex-linked dominant (2) Sex-linked recessive
 (3) Autosomal dominant (4) Autosomal recessive

Key: Answer (4)

Sol: Autosomal recessive



19. 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.

- (1) Monocot Root (2) Monocot Stem
 (3) Dicot Root (4) Dicot Stem

Key: Answer (4)

Sol: Dicot stem have conjoint collateral and open type of vascular bundles.

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20. 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?

- (1) Metaphase (2) Telophase
(3) Prophase (4) Anaphase

Key: Answer (2)

Sol: Chromosomes were placed at the opposite poles at telophase

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

- (1) Biological names are underlined separately when handwritten
(2) Biological names are printed in italics to indicate their non-Latin origin
(3) The first word represents the genus while second component denotes the specific epithet
(4) Biological names are generally in Latin or Latinized irrespective of their origin

Key: Answer (2)

Sol: Biological names are printed in italics to indicate their Latin origin

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

Column-I (Bacteria)	Column-II (Shape)
A) <i>Coccus</i>	I) Rod-shaped
B) <i>Bacillus</i>	II) Spiral
C) <i>Vibrium</i>	III) Spherical
D) <i>Spirillum</i>	IV) Comma-shaped
(1) A – III, B – II, C – IV, D – I	(2) A – IV, B – III, C – II, D – I
(3) A – IV, B – I, C – II, D – III	(4) A – III, B – I, C – IV, D – II

Key: Answer (4)

Sol: *Coccus* - Spherical

Bacillus - Rod-shaped

Vibrium - Comma-shaped

Spirillum - Spiral

23. Read the given statements and choose the correct option

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

Statement-II: Protonema develops directly from a spore

- (1) Statement I is false but Statement II is true
(2) Both Statement I and Statement II are false
(3) Both Statement I and Statement II are true
(4) Statement I is true but Statement II is false

Key: Answer (1)

Sol: Gemmae are multicellular green asexual buds.

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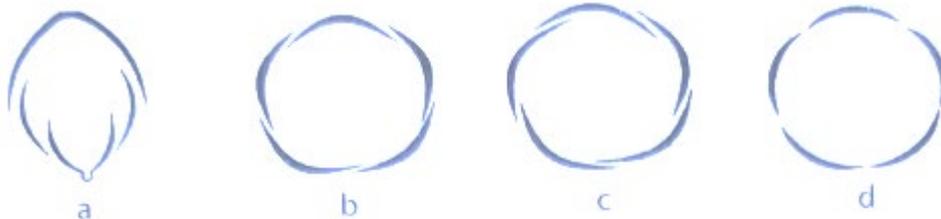
24. During a field trip, a student observed a marine organism with worm-like body. The cylindrical body was divisible into proboscis, collar and a long trunk. The organism may be _____

- (1) *Pterophyllum* (2) *Trygon* (3) *Balanoglossus* (4) *Ophiura*

Key: Answer (3)

Sol: *Balanoglossus* belongs to the Phylum Hemichordata. The phylum consists of worm-like marine animals, cylindrical body and is composed of anterior proboscis, a collar, and a long trunk.

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



- (1) a-Vexillary, b-Imbricate, c-Twisted, d- Valvate
 (2) a-Vexillary, b-Imbricate, c-Valvate, d- Twisted
 (3) a-Vexillary, b-Twisted, c-Imbricate, d- Valvate
 (4) a-Imbricate, b-Valvate, c-Vexillary, d- Twisted

Key: Answer (1)

Sol: a-Vexillary,
 b-Imbricate,
 c-Twisted,
 d- Valvate

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

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 pith without cambial ring	(III) T.S. of monocot root
(D) Conjoint, closed with sclerenchymatous bundle sheath	(IV) T.S. of dicot stem
(1) A – II, B – IV, C – III, D – I	(2) A – III, B – IV, C – I, D – II
(3) A – I, B – II, C – III, D – IV	(4) A – II, B – III, C – IV, D – I

Key: Answer (1)

Sol: Radial, tetrarch, cambial ring between Xylem and phloem at later stages - T.S. of dicot root
 Conjoint, open and endarch - T.S. of dicot stem
 Radial, polyarch, large pith without cambial ring - T.S. of monocot root
 Conjoint, closed with sclerenchymatous bundle sheath - T.S. of monocot stem

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27. Which of the following statements are correct with respect to Frogs?

- (A) Bidder's canals are present in male Frogs
- (B) Copulatory pads are present in female Frogs
- (C) Sound producing vocal sacs are present in male Frogs
- (D) Cloaca is present in male Frog only

Choose the most appropriate answer from the options given below:

- (1) A and C (2) B and D (3) A and D (4) A and B

Key: Answer (1)

Sol: Male frogs can be distinguished by the presence of sound producing vocal sacs and also a copulatory pad on the first digit of the fore limbs which are absent in female frogs.

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

- (1) Exclusion and inclusion bodies (2) Fat bodies
- (3) Exclusion bodies (4) Inclusion bodies

Key: Answer (4)

Sol: Inclusion bodies are reserved food material in prokaryotic cells

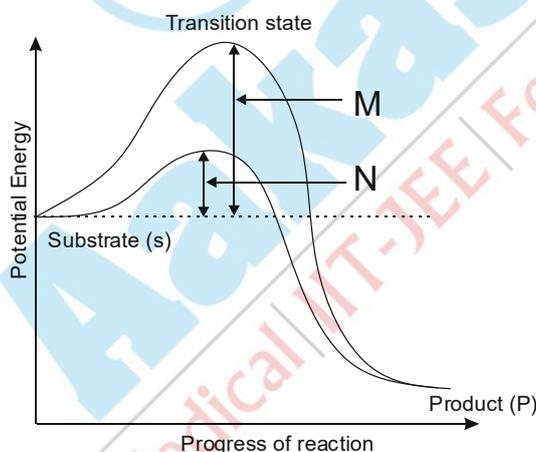
29. The cell wall less prokaryote among the following is

- (1) Cyanobacteria (2) Mycoplasma (3) Bacteria (4) Blue-Green Algae

Key: Answer (2)

Sol: Mycoplasma lacks cell wall

30. The graph showing the concept of activation energy of enzyme is given below



Observe the graph and choose the correct option for M and N.

- (1) M-High temperature, High activation energy, N-Low temperature, Low activation energy
- (2) M-High substrate, High activation energy, N-Low substrate, Low activation energy
- (3) M-Activation energy without enzyme, N-Activation energy with enzyme
- (4) M-Activation energy with enzyme, N-Activation energy without enzyme

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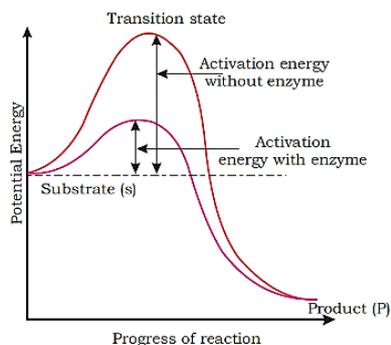
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Key: Answer (3)

Sol:



Enzymes eventually bring down the energy barrier making the transition of 'S' to 'P' more easy.

31. 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:

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
(1) A – IV, B – I, C – II, D – III, E – V	(2) A – II, B – IV, C – I, D – III, E – V
(3) A – I, B – II, C – III, D – IV, E – V	(4) A – V, B – IV, C – I, D – III, E – II

Key: Answer (2)

Sol: Leptotene - Chromosomes visible under light microscope
 Zygotene - Chromosomes start pairing together
 Pachytene - Exchange of genetic materials between non-sister chromatids of the homologous chromosomes
 Diplotene - Dissolution of synaptonemal complex
 Diakinesis - Terminalisation of chiasmata

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

Statement-I: In Calvin cycle, Carboxylation is catalyzed by PEP Carboxylase
Statement-II: In Hatch-Slack pathway, Carboxylation is catalyzed by RuBP Carboxylase

- (1) Statement I is false but Statement II is true
- (2) Both Statement I and Statement II are false
- (3) Both Statement I and Statement II are true
- (4) Statement I is true but Statement II is false

Key: Answer (2)

Sol: In Calvin cycle, RuBP act as a carboxylase
 In Hatch-Slack pathway, carboxylation enzymes is PEP carboxylase.

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33. The TCA cycle starts with the condensation of acetyl group with _____

- (1) α – Ketoglutaric acid (2) Succinic acid
 (3) Oxaloacetic acid (4) Citric acid

Key: Answer (3)

Sol: TCA cycle starts with condensation of Acetyl CoA with OAA.

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

- | Column-I | Column-II |
|------------------------------------|------------------------------------|
| (A) Abscisic acid | (I) Adenine derivative |
| (B) Gibberellins | (II) Indole acetic acid |
| (C) Kinetin | (III) Carotenoid derivative |
| (D) Auxin | (IV) Terpenes |
| (1) A – III, B – IV, C – I, D – II | (2) A – III, B – I, C – II, D – IV |
| (3) A – I, B – II, C – III, D – IV | (4) A – III, B – I, C – IV, D – II |

Key: Answer (1)

Sol: Abscisic acid - Carotenoid derivative

Gibberellins - Terpenes

Kinetin - Adenine derivative

Auxin - Indole acetic acid

35. The respiratory mechanism controlled by medulla oblongata can be altered by

- (1) Both Pneumotaxic and Chemosensitive areas of pons and medulla oblongata
 (2) Corpus callosum of brain
 (3) Pneumataxic center in the pons
 (4) Chemosensitive area in the medulla

Key: Answer (1)

Sol: Respiratory rhythm is maintained by the respiratory centre in the medulla region of brain. A pneumotaxic centre in the pons region of the brain and a chemosensitive area in the medulla can alter respiratory mechanism.

36. Which among the three layers of blood vessel wall – Tunica intima, Tunica media and Tunica Externa is comparatively thin in the veins?

- (1) Tunica externa (2) Both tunica media and tunica externa
 (3) Tunica media (4) Tunica intima

Key: Answer (3)

Sol: The tunica media is comparatively thin in the veins

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37. In nephron, transport of substances like sodium chloride and urea is facilitated by the special arrangement called counter current mechanism that comprises of

- (1) Vasa Recta and collecting duct (2) Ascending limb and collecting duct
 (3) Henle's loop and Vasa Recta (4) Henle's loop and glomerulus

Key: Answer (3)

Sol: The NaCl and Urea transport is facilitated by the special arrangement of Henle's loop and *vasa recta*, which is called the counter current mechanism. This mechanism helps to maintain a concentration gradient in the medullary interstitium.

38. In the mechanism of muscle contraction or shortening of muscle, the _____ gets reduced whereas the _____ retain the length.

- (1) Z line, I bands (2) A bands, Z line
 (3) A bands, I bands (4) I bands, A bands

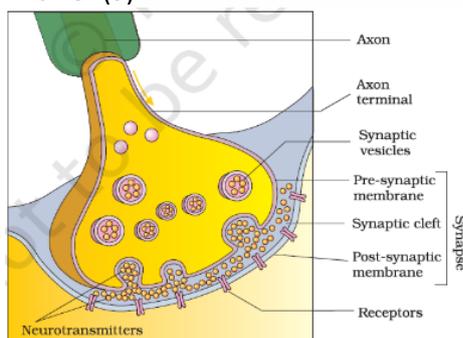
Key: Answer (4)

Sol: During shortening of the muscle, i.e., contraction, the 'I' bands get reduced, whereas the 'A' bands retain the length.

39. Identify the correct sequence of action potential as it arrives at the axon terminal from the choices given below:

- (1) Axon terminal → Post-synaptic membrane → Synaptic cleft → Synaptic vesicles → Post-synaptic neuron
 (2) Axon terminal → Synaptic vesicles → Post-synaptic membrane → Synaptic cleft → Post-synaptic neuron
 (3) Axon terminal → Synaptic vesicles → Synaptic cleft → Post-synaptic membrane → Post-synaptic neuron
 (4) Axon terminal → Synaptic cleft → Synaptic vesicles → Post-synaptic neuron → Post-synaptic membrane

Key: Answer (3)



Sol:

When an impulse (action potential) arrives at the axon terminal, it stimulates the movement of the synaptic vesicles towards the membrane where they fuse with the plasma membrane and release their neurotransmitters in the synaptic cleft. The released neurotransmitters bind to their specific receptors, present on the post-synaptic membrane.

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40. Identify the statement/s given below that does not correspond to the functions of cortisol
- i) Maintains cardiovascular system and kidney functions
 - ii) Produces anti-inflammatory reactions
 - iii) Maintains electrolyte balance, osmosis and blood pressure
 - iv) Suppresses immune response
 - v) Stimulates RBC production
- (1) iii only (2) iv only (3) i and ii only (4) iii and v only

Key: Answer (1)

Sol: Aldosterone helps in the maintenance of electrolytes, body fluid volume, osmotic pressure and blood pressure.

41. When pollen grains of a flower of plant pollinate the stigma of flower of another plant, it is called _____
- (1) Dichogamy (2) Geitonogamy (3) Xenogamy (4) Autogamy

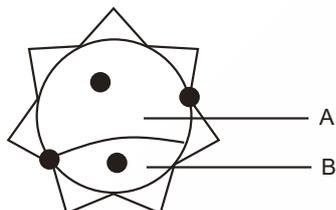
Key: Answer (3)

Sol: Xenogamy is transfer of pollen grain from anther to stigma of two different plants of two different flowers belongs to same species.

42. Fusion of a male gamete with the central cell in the embryo sac of an angiosperm is called _____
- (1) Syngamy (2) Apomixis
(3) Double fertilization (4) Triple fusion

Key: Answer (4)

Sol: Triple fusion is the fusion of male gamete with central cell.



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

- (1) 'A' is generative cell which gives rise to pollen tube and 'B' is a vegetative cell which forms male gametes
- (2) 'A' is a vegetative cell with abundant food reserve and 'B' is a generative cell which forms male gametes
- (3) 'A' is a generative cell which forms male gametes and 'B' is a vegetative cell which produces pollen tube
- (4) 'A' is a vegetative cell which gives rise to male gametes and 'B' is a generative cell which produces pollen tube

Key: Answer (2)

Sol: Vegetative cell is larger with abundant reserved food
Generative cell is smaller and forms two male gametes.

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44. Match the hormone with its site of production:

Hormone		Site of production	
(a)	hCG and hPL	i)	Ovary
(b)	Progesterone	ii)	Placenta
(c)	Androgens	iii)	Corpus luteum
(d)	Relaxin	iv)	Leydig cells

(1) a – iv, b – I, c – ii, d - iii

(2) a – I, b – ii, c – iv, d – iii

(3) a – ii, b – iii, c – iv, d – I

(4) a – iii, b – I, c – iv, d – ii

Key: Answer (3)

Sol: Placenta acts as an endocrine tissue and produces several hormones like human chorionic gonadotropin (hCG), human placental lactogen (hPL), estrogens, progestogens, etc. In the later phase of pregnancy, a hormone called relaxin is also secreted by the ovary.

45. Choose the correct sequence of sperm transport during ejaculation

(1) Seminiferous tubules Vasa efferentia → rete testis → epididymis → vas deferens → ejaculatory duct

(2) Seminiferous tubules → rete testis → epididymis → vas deferens → vasa efferentia → ejaculatory duct

(3) Seminiferous tubules → rete testis → vasa efferentia → epididymis → vas deferens → ejaculatory duct

(4) Seminiferous tubules → rete testis → epididymis → vasa efferentia → vas deferens → ejaculatory duct

Key: Answer (3)

Sol: The seminiferous tubules of the testis open into the vasa efferentia through rete testis. The vasa efferentia leave the testis and open into epididymis located along the posterior surface of each testis. The epididymis leads to vas deferens that ascends to the abdomen and loops over the urinary bladder. It receives a duct from seminal vesicle and opens into urethra as the ejaculatory duct.

46. Select the mismatched pair:

a) First month of pregnancy – Formation of heart

b) Second month of pregnancy – Movement of foetus

c) Third month of pregnancy – Formation of most of the major organ systems

d) Sixth month of pregnancy – Eye lids separate and eye lashes are formed

(1) c

(2) d

(3) a

(4) b

Key: Answer (4)

Sol: The first movements of the foetus and appearance of hair on the head are usually observed during the fifth month.

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47. Out of the following options, identify which one is NOT a natural method of contraception?

- (1) Lactational amenorrhoea (2) Periodic abstinence
(3) Coitus interruptus (4) Implants

Key: Answer (4)

Sol: Natural methods work on the principle of avoiding chances of ovum and sperms meeting. **Periodic abstinence, Withdrawal, or coitus interruptus and Lactational amenorrhoea** are some examples of Natural methods

48. In zygote intrafallopian tube transfer, the embryo upto _____ stage is transferred into the fallopian tube

- (1) 8 blastomeres (2) 32 blastomeres
(3) 2 blastomeres (4) 16 blastomeres

Key: Answer (1)

Sol: In ZIFT, the zygote or early embryos (with up to 8 blastomeres) could then be transferred into the fallopian tube.

49. Read the following statements:

Statement I : MTP is to get rid off wanted pregnancies due to casual unprotected intercourse or failure of contraceptive used during coitus or rapes

Statement II : MTPs are performed legally by qualified doctors by giving proper medical justification.

Choose the correct answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect
(2) Statement I is incorrect but Statement II is correct
(3) Statements I and II are correct
(4) Statements I and II are incorrect

Key: Answer (2)

Sol: MTP is to get rid of unwanted pregnancies either due to casual unprotected intercourse or failure of the contraceptive used during coitus or rapes.

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

- (1) 8 (2) 12 (3) 6 (4) 4

Key: Answer (1)

Sol: The number of heterozygous in given genotype is = 3.

Thus $2^n = 2^3 = 8$.

51. When a single gene exhibits multiple phenotypic expression, the phenomenon is called _____

- (1) Pleiotropy (2) Co-dominance
(3) Polygenic inheritance (4) Incomplete dominance

Key: Answer (1)

Sol: Pleiotrophic gene exhibits multiple phenotypes.

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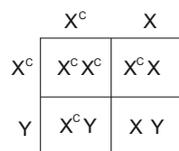
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52. A colourblind man marries a carrier woman. The percentage of their colourblind progeny in the next generation will be _____
 (1) 75% (2) 100% (3) 25% (4) 50%

Key: Answer (4)

Sol: The percentage of colourblind progeny is 50%.



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

	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

- (1) c (2) d (3) a (4) b

Key: Answer (1)

Sol: Down's syndrome - Broad palm, physical and mental development retarded
 Turner's syndrome - Sterile females with rudimentary ovaries.

54. RNA polymerase II is responsible for the transcription of _____
 (1) hnRNA (2) snRNA (3) tRNA (4) rRNA

Key: Answer (1)

Sol: RNA polymerase II synthesis – hnRNA.

55. Which of the following enzymes increases the permeability of the bacterial cell to lactose?
 (1) Transacetylase (2) Amylase
 (3) β-galactosidase (4) Permease

Key: Answer (4)

Sol: Permease – Enzyme which increases permeability of the bacterial cell to lactose.

56. Which of the following statements are correct with reference to prokaryotic genome?
 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
 (1) Only a, d and e are correct (2) Only a, b and c are correct
 (3) Only a, b and are correct (4) Only b, c and e are correct

Key: Answer (4)

Sol: Prokaryotic genome is Polycistronic without introns.

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57. When a change in the gene frequency of a population occurs by chance, it is called _____

- (1) Genetic recombination (2) Genetic drift
 (3) Founder effect (4) Gene migration

Key: Answer (2)

Sol: When migration of a section of population to another place and population occurs, gene frequencies change in the original as well as in the new population. If the gene migration occurs by chance, it is called genetic drift.

58. Darwin’s finches represent one of the best examples of _____

- (1) Chemical evolution (2) Genetic equilibrium
 (3) Seasonal migration (4) Adaptive radiation

Key: Answer (4)

Sol: This 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 adaptive radiation. Darwin’s finches represent one of the best examples of this phenomenon.

59. Choose the correct statements from the following :

- a) Charles Darwin travelled around the world in a ship called HMS Beagle
 b) There has been gradual evolution of life forms
 c) According to Darwin, fitness refers to physical fitness only
 d) Fossils are remains of hard parts of life forms found in rocks
 e) Hugo De Vries, a naturalist worked in Malay Archipelago.

- (1) a, b and d are correct (2) a, c and d are correct
 (3) a, b and e are correct (4) a, c and e are correct

Key: Answer (3)

Sol: The fitness, according to Darwin, refers ultimately and only to reproductive fitness. Alfred Wallace, a naturalist worked in Malay Archipelago.

60. In which of the following, HIV replicates and produces its progeny viruses?

- (1) Killer T-lymphocytes (2) Suppressor T-lymphocytes
 (3) Helper T-lymphocytes (4) Memory T-lymphocytes

Key: Answer (3)

Sol: HIV enters into helper T-lymphocytes (TH), replicates and produce progeny viruses.



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