Sample Paper-03 **Class 12th NEET (2024)**

ZOOLOGY

SECTION-A

1. **Assertion (A):** Formation of sperm takes place in seminiferous tubules of testes.
Reason (R): Seminiferous tubules is lined with male germ cells only.
(1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are true but **Reason (R)** is not correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true but **Reason (R)** is false.
(4) **Assertion (A)** is false but **Reason (R)** is true.

2. Which of the following lists **correct** constituents of mammalian testes?
(1) Graafian follicles, Sertoli cells, Leydig cells
(2) Graafian follicles, Sertoli cells, Seminiferous tubules
(3) Sertoli cells, Seminiferous tubules, Leydig cells
(4) Graafian follicles, Leydig cells, Seminiferous tubules

3. Layers of an ovum from outside to inside is;
(1) corona radiata, zona pellucida and vitelline oolemma.
(2) zona pellucida, corona radiata and vitelline oolemma.
(3) vitelline membrane, zona pellucida and corona radiata.
(4) zona pellucida, vitelline membrane and corona radiata.

4. Which match(es) is/are **incorrect**?
(a) Spermatogonium – 46 chromosomes
(b) Spermatid – 46 chromosomes
(c) Sperm – 23 chromosomes
(d) Secondary spermatocyte – 23 chromosomes
(1) Only (b)
(2) (a), (b) and (c)
(3) (c) and (d)
(4) (a), (b), (c) and (d)

5. No menstruation cycle occurs;
(a) before puberty.
(b) after 50 years.
(c) during lactation.
(d) between puberty and menopause.
(1) (a) and (b)
(2) (a), (b) and (c)
(3) (c) and (d)
(4) (a), (b), (c) and (d)

6. At the time of pregnancy, the corpus luteum secretes _____ which maintains pregnancy.
(1) relaxin (2) oxytocin
(3) prolactin (4) progesterone

7. Which among the following statements is **correct** to indicate the difference between sperm and egg?
(1) Cytoplasm in sperm is more abundant than in egg.
(2) Nucleus is clear in sperm and very compact in egg.
(3) Mitochondria form a sheath in egg and diffuse in sperm.
(4) Accessory membrane are absent in sperm but present in egg.

8. Which of the following can be taken as characteristic demographic features of the developing countries?
(a) High fertility rate
(b) Rapidly rising mortality rate
(c) Very young age distribution
(d) Rapid population growth
(e) Rapidly falling mortality rate
(f) Very old age distribution
(1) (a), (b) and (d)
(2) (a), (c), (d) and (e)
(3) (a), (b), (c) and (e)
(4) (a), (b), (d) and (e)

9. Which of the following methods prevent conception?
(a) Increase in the thickness of cervical mucus
(b) By preventing ovulation
(c) By making uterus unfit for implantation
(1) Only (b)
(2) Only (b)
(3) (a), (b) and (c)
(4) (a) and (b)

10. Sterilisation in males is _____ and in females is _____.
(1) vasectomy; tubectomy
(2) tubectomy; vasectomy
(3) vasectomy; vasectomy
(4) tubectomy; tubectomy

11. Which of the following define test tube baby **correctly**?
(1) Ova and sperms are collected and mixed in a test tube to form zygote.
(2) Ova and sperms are centrifuged in test tube to form zygote.
(3) Ova and sperms are induced to fuse to form zygote under controlled condition.
(4) Embryogenesis is allowed to continue in test tube under controlled conditions.

12. By the statement survival of the fittest, Darwin meant that;
(1) the strongest of all species survives.
(2) the most intelligent of the species survives.
(3) the cleverest of the species survives.
(4) the species most adaptable to changes survives.

13. Pasteur's experiments and similar ones that followed, convinced most people that spontaneous generation of life did not happen because;
(1) Pasteur was extremely meticulous.
(2) Pasteur did not boil his flask for a long time.
(3) Pasteur used very fine mesh screens to cover his flask.
(4) Pasteur's swan-necked flasks ruled out the objection that spoiled air could have contaminated his experiments.

14. Life cannot originate from inorganic materials at present because of;
(1) the high degree of environmental pollution.
(2) very high amount of oxygen in the atmosphere.
(3) very high atmospheric temperature.
(4) the absence of raw materials.

15. Consider the following statements regarding the genetic drift.
(a) It is the change in the relative frequency with which a gene variant (allele) occurs in a population due to random sampling and chance.
(b) The changes produced are always harmful to the population.
(c) Changes due to genetic drift are not driven by environmental or adaptive pressures.
The **correct** statements include;
(1) (a), (b) and (c)
(2) (a) and (b)
(3) (a) and (c)
(4) (b) and (c).

16. All these facts are **true** about the Neanderthal man except one. Identify it.
(1) Brain size was 1400 cc.
(2) They used hides to protect their bodies.
(3) They lived in east and central Asia about 1,00,000– 40,000 years back.
(4) Their fossils were discovered in Java in 1891.

17. The unit of natural selection is the;
(1) species.
(2) individual organism.
(3) population.
(4) sub species.

18. What is golden rice?
(1) A variety of rice grown along the yellow river in China.
(2) Long-stored rice having yellow colour tint.
(3) Transgenic rice having the gene for beta-carotene.
(4) A wild variety of rice with yellow coloured grains.

19. Out of the following diseases which are caused due to bacterial infection?
(a) Typhoid
(b) Elephantiasis
(c) Cholera
(d) Tuberculosis
(1) (a) and (b) (2) (b) and (c)
(3) (a), (c) and (d). (4) (a), (b), (c) and (d)

20. Innate immunity is a _____ type of defence mechanism.
(1) specific (2) non-specific
(3) congenital (4) Both (2) and (3)

21. Interferon is protein that;
(1) inactivates a virus.
(2) protects unattacked cells from virus.
(3) prevents viruses from taking over the cellular machinery.
(4) Both (2) and (3)

22. The microparticles coated with DNA to be bombarded with gene guns for transformation are composed of what?
(1) Silver or Platinum
(2) Platinum or Zinc
(3) Silicon or Platinum
(4) Gold or Tungsten

23. Ringworm disease in humans is caused by the pathogen *Microsporum*, which belongs to the same kingdom of organisms as?
(1) *Taenia*, a tapeworm
(2) *Wuchereria*, a filarial worm
(3) *Rhizopus*, a mould
(4) *Ascaris*, a roundworm

24. **Assertion (A):** Cellular defence mechanism in eukaryotes is RNAi.
Reason (R): RNAi is silencing of a specific tRNA.
(1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are true but **Reason (R)** is not correct explanation of **Assertion (A)**.
(3) Only **Assertion (A)** is true but **Reason (R)** is false.
(4) Both **Assertion (A)** and **Reason (R)** are false.

25. In colostrum, the antibodies that protect the newborn from certain diseases are of what type?
(1) IgG type
(2) IgA type
(3) IgD type
(4) IgE type

26. In which DNA sequence does the restriction enzyme EcoR I always cleave the nitrogen sequence?
(1) AAGCTT (2) GGATCC
(3) GAATTC (4) TGGCCA

27. Which of the following is the **most** accepted definition of biotechnology by European Federation of Biotechnology (EFB)?
(1) Maintenance of sterile ambiences for enabling growth of desired microbes/eukaryotic cells in large quantities.
(2) Technique of using live organisms or enzymes from organisms to produce products and processes useful to animals.
(3) Process which use genetically engineered animals only on a large scale for benefit of mankind
(4) Integration of natural science and organisms cells, parts thereof and molecular analogies for products and services

28. When a recombinant DNA is inserted within the coding sequence of an enzyme, β -galactosidase;
(1) this results in inactivation of the enzyme.
(2) this is called insertional inactivation.
(3) the colonies do not produce any colour.
(4) All of these.

29. Function of ori site in a vector is to;
(1) initiate insertional inactivation.
(2) initiate replication.
(3) code for the proteins involved in replication of the plasmid.
(4) initiate antibiotic resistance.

30. Gel electrophoresis is used for;
(1) construction of rDNA.
(2) isolation of DNA.
(3) cutting of DNA.
(4) separation of DNA fragments according to their size or length.

31. Which is **true** about RNAi process?
(1) It is a method of cellular defence.
(2) It involves silencing of a specific mRNA due to a complementary dsRNA molecule.
(3) dsRNA binds to mRNA and prevents its translation.
(4) All of these.

32. **Assertion (A):** Periodic abstinence is a method in which couples avoid from coitus from day 17 to 27 of menstrual cycle.
Reason (R): It is not a very effective method.
(1) Both **Assertion (A)** and **Reason (R)** are true and **Reason (R)** is correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are true but **Reason (R)** is not correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true but **Reason (R)** is false.
(4) **Assertion (A)** is false but **Reason (R)** is true.

33. Match **List-I** with **List-II** to find out the **correct** option.

List I		**List II**	
(A)	Mons pubis	(I)	Embryo formation
(B)	Antrum	(II)	Sperm
(C)	Inner cell embryo	(III)	Female external genitalia
(D)	Acrosome	(IV)	Graafian follicle

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

34. Insulin used for diabetes was earlier extracted from;
(1) dead bodies of humans gland.
(2) pituitary gland of other mammals.
(3) pancreas of slaughtered cattle and pigs.
(4) adrenal glands of cattles.

35. Which is **not true** with respect to transgenic animals and their contribution to human welfare?
(1) Transgenic mice are being tested to ensure safety of polio vaccine.
(2) Rosie's milk contained human gene-insulin.
(3) Transgenic cows produce milk with less fat.
(4) Transgenic sheep grow more wool.

SECTION-B

36. A human female is born with millions of eggs (primary oocyte at the time of birth, only some 500 eggs get a chance of maturity). What is the destiny of rest of the eggs?
(1) Rest of the eggs differentiate back to thecal and granulosa cells.
(2) Rest of the eggs nurture the dominant follicular cell.
(3) Rest of the eggs move out of the ovary and are destroyed by leucocytes.
(4) Rest of the eggs break down and are absorbed, that is, degenerative follicular atresia.

37. A regular cycling woman is not menstruating, which one of the following is the **most** likely root cause of this?
(1) Maintenance of the hypertrophic endometrial lining.
(2) Maintenance of high concentration of sex-hormones in the bloodstream.
(3) Retention of well developed corpus luteum.
(4) Fertilisation of the ovum.

38. Study the following sentences.
(a) Testosterone influences the male secondary sexual characters.
(b) Gestation period in humans is approximately 266 days.
(c) Bulbourethral glands secrete a vaginal lubricant.
(d) Placenta secretes oxytocin.
Identify the **correct** statements.
(1) (a) and (d)
(2) (b) and (c)
(3) (c) and (d)
(4) (a) and (b)

39. Which of the following statements is **not** correct about oral contraceptive pills?
(1) They have to be taken daily for a period of 21 days, starting preferably within the first five days of menstrual cycle.
(2) They contain small doses of progestogen-estrogen combination.
(3) They inhibit ovulation and implantation.
(4) Ovum and sperms are prevented from physically meeting with the help of barriers.

40. Which of the following is **true**?
(a) Generally MTP is safe during the first trimester.
(b) Chances of contraception are nil until the mother breast-feeds the infant up to two years.
(c) IUDs are very effective contraceptives.
(d) Pills may be taken up to one week after coitus to prevent conception.
(1) (a) and (b) (2) (b) and (c)
(3) (c) and (d) (4) (a) and (c)

41. Select the **false** statement.
(a) *Dryopithecus* was more ape-like.
(b) *Ramapithecus* was more man-like.
(c) *Dryopithecus* and *Ramapithecus* both were hairy and walked like gorillas and chimpanzees.
(d) *Homo erectus* had brain capacity between 650-800cc.
(e) *Australopithecines* lived in the East African grassland probably 2 mya.
(1) Only (b) (2) (b) and (c)
(3) Only (d) (4) None of these

42. Select the **correct** statements.
(a) The essence of Darwinian theory about evolution is natural selection.
(b) The rate of appearance of new forms is not linked to the life cycle or the life span.
(c) Adaptive ability is inherited.
(d) Mutation is random and directionless.
(1) (b) and (c) (2) (a), (c) and (d)
(3) Only (a) (4) All of these

43. According to Hugo de Vries, speciation due to mutation is also known as saltation which means;
(1) single-step variation.
(2) variations at regular intervals.
(3) single-step large mutation.
(4) huge change due to natural selection.

44. Mark the **incorrect** statement.
(1) Each antibody has two antigen binding sites.
(2) Typhoid infection promotes formation of interferons.
(3) Antibody is represented as H_2L_2.
(4) Skin is part of physical barrier.

45. Which of the following is **not** a means of transmission of AIDS?
(1) Sexual contact with uninfected person
(2) Transfusion of contaminated blood
(3) Sharing infected needles
(4) Child born to an HIV infected mother

46. Which of the following is a non-specific type of defence that is present at the time of birth?
(1) Acquired Immunity
(2) Humoral immune response
(3) Cell mediated immunity
(4) Innate immunity

47. In the case of peppered moth (*Biston betularia*) the black-coloured form became dominant over the light-coloured form in England during industrial revolution. This is an example of;
(1) natural selection whereby the darker forms were selected.
(2) protective mimicry.
(3) inheritance of darker colour character acquired due to the darker environment.
(4) appearance of the darker coloured individuals due to very poor sunlight.

48. The role of DNA ligase in the construction of a recombinant DNA molecule involves;
(1) formation of phosphodiester bond between two DNA fragments.
(2) formation of hydrogen bonds between sticky ends of DNA fragments.
(3) ligation of all purine and pyrimidine bases.
(4) None of these.

49. Which of the following statements is **true** about bioreactor?
(a) Bioreactor provides the optimal conditions for obtaining the desired product.
(b) Raw materials are biologically converted into specific products.
(c) A stirred tank reactor is horizontal in shape.
(d) Large volume of cultures cannot be processed.
(1) (a) and (b)
(2) (b) and (c)
(3) (c) and (d)
(4) All of these

50. Critical research areas of biotechnology are;

(1) providing the best catalyst in the form of an improved organism, usually a microbe or pure enzyme.

(2) creating optimal conditions through engineering for a catalyst to act.

(3) downstream processing technologies to purify the protein organic compound.

(4) All of these.

PW Web/App - https://smart.link/7wwosivoicgd4

Library- https://smart.link/sdfez8ejd80if