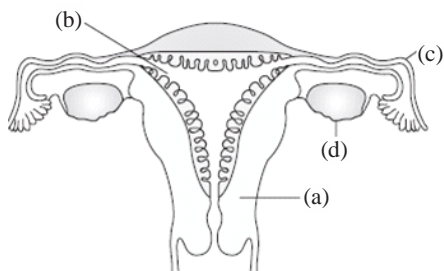


**ZOOLOGY****SECTION-A**

1. Choose the **correct** combination of the labelling for the following structure.



- (1) (a) – Oviduct; (b) – Uterus; (c) – Cervix; (d) – Ovary
(2) (a) – Cervix; (b) – Uterus; (c) – Ovary; (d) – Tumour
(3) (a) – Uterus; (b) – Uterine cavity; (c) – Cervix; (d) – Ovary
(4) (a) – Cervix; (b) – Uterine cavity; (c) – Fallopian tube; (d) – Ovary

2. Which of the following options is **correct**?

	Haploid	Diploid
(1)	Secondary oocyte	Primary spermatocyte
(2)	Secondary Spermatocyte	Secondary oocyte
(3)	Primary oocyte	Secondary Spermatocyte
(4)	Ovum	Spermatid

3. In the event of pregnancy, the corpus luteum persists under the influence of;

- (1) LH
(2) FSH
(3) chorionic gonadotropin
(4) progesterone

4. Signals from fully developed foetus and placenta ultimately lead to parturition which requires the release of;

- (1) estrogen from placenta
(2) oxytocin from maternal pituitary
(3) oxytocin from foetal pituitary
(4) relaxin from Leydig cells

5. Which of the following hormones is **not** a secretion product of human placenta?

- (1) Human chorionic gonadotropin
(2) Vasopressin
(3) Estrogen
(4) Progesterone

6. The earliest sign of pregnancy is;

- (1) Profuse menstrual bleeding
(2) Premature degeneration of corpus luteum
(3) Production of progesterone and estradiol
(4) Absence of menstrual bleeding

7. Population of India is increasing due to;

- (1) Increase in infant mortality rate
(2) Increase in number of people reaching reproductive age
(3) Increase in death rate
(4) Increase in maternal mortality rate

8. Progestogen or progestogen-estrogen combination pill helps in preventing pregnancy by **not** allowing;

- (1) Ovulation
(2) Fertilisation
(3) Implantation
(4) Both (1) and (3)

9. STDs lead to;

- (1) Itching, fluid discharge, slight pain, swellings etc.
(2) Pelvic inflammatory diseases (PID), ectopic pregnancies, still births, infertility, abortions, etc.
(3) Both (1) and (2)
(4) None of these

10. In lactational amenorrhoea, there is no ovulation or menstruation during the period of intense lactation following parturition, due to high level of prolactin, which;

- (1) inhibits the release of gonadotropins.
(2) inhibits the release of androgen.
(3) stimulates the level of estrogen.
(4) stimulates the release of androgen



11. Which of the following is the unit of evolution?
(1) Cell (2) Individual
(3) Population (4) Species
12. The **correct** sequence of the substances appeared during the course of origin of life on earth was;
(1) Glucose, amino acids, nucleic acids and proteins
(2) Ammonia, amino acids, proteins and nucleic acids
(3) Nucleotides, amino acids, nucleic acids and enzymes
(4) Amino acids, ammonia, phosphates and nucleic acids
13. Which of the following is a set of homologous organs?
(1) Wings of grasshopper and flippers of whale
(2) Wings of birds and front feet of horse
(3) Wings of housefly and wings of birds
(4) All of these
14. Equation of Hardy–Weinberg is depicted as;
(1) $p^2 + 2pq + q^2 = 0$ (2) $p^2 + 2pq + q^2 = 1$
(3) $p + 2pq + q = 0$ (4) $p + 2pq + q = 1$
15. Evolution of birds occurred in;
(1) Devonian periods
(2) Silurian periods
(3) Carboniferous periods
(4) Jurassic period

16. Match the following concepts of evolution in **List-I** with **List-II** and select the **correct** option.

List-I		List-II	
(A)	Mutation	(I)	Changes in population's allele frequencies due to chance alone
(B)	Gene flow	(II)	Difference in survival and reproduction among variant individuals
(C)	Natural selection	(III)	Immigration, emigration change allele frequencies
(D)	Genetic drift	(IV)	Source of new alleles

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

17. Common symptoms of amoebiasis are;
(1) Constipation, stool with blood clots
(2) Abdominal pain and cramp
(3) Weakness
(4) All of these
18. The main reason why antibiotics could not solve all the problems of bacteria mediated disease is?
(1) Decreased efficiency of the immune system.
(2) Insensitivity of the individual following prolonged exposure to antibiotics.
(3) Development of mutant strains resistant to antibiotics.
(4) Inactivation of antibiotics by bacterial enzymes.
19. Each antibody has (a) polypeptide chains, (b) small chains called (c) chains and (d) longer chains called (e) chains.
The antibody, therefore, is represented as (f).
(1) (a) – four; (b) – two; (c) – light; (d) – two; (e) – heavy; (f) – H_2L_2
(2) (a) – six; (b) – three; (c) – light; (d) – three; (e) – heavy; (f) – H_2L_2
(3) (a) – two; (b) – one; (c) – light; (d) – one; (e) – heavy; (f) – H_2L_2
(4) (a) – five; (b) – two; (c) – light; (d) – three; (e) – heavy; (f) – H_2L_2
20. AIDS is majorly detected by:
(1) Widal (2) ELISA
(3) CBC (4) MRI
21. _____ is a very effective painkiller and sedative used for patients who have undergone surgery.
(1) Paracetamol (2) Morphine
(3) LSD (4) Barbiturate
22. What is a tumour-inducing plasmid widely used in producing transgenic plants?
(1) *Escherichia coli*
(2) *Bacillus thuringiensis*
(3) *Pneumococcus*
(4) *Agrobacterium tumefaciens*
23. How many DNA molecules are formed from a DNA template molecule after 4 PCR cycles?
(1) 4 (2) 32
(3) 16 (4) 8



24. Which of the following are the **most** distantly related to one another?
- (1) Sunfish and dolphins
 - (2) Tree frogs and snakes
 - (3) Vampire bats and birds
 - (4) Bears and whales
25. Construction of first rDNA by linking a gene encoding antibiotic resistance gene with native plasmid of *Salmonella typhimurium* was done by:
- (1) Smith and Wilson
 - (2) Sanger and Hardy
 - (3) Cohen and Boyer
 - (4) Arber and Nathan
26. Given below are two statements.
Statement I: RNA mutates at a faster rate.
Statement II: Viruses having RNA genome and shorter life span mutate and evolve faster.
In the light of the above statements, choose the **correct** answer from the options given below:
- (1) Both Statement I and Statement II are false.
 - (2) Statement I is true but Statement II is false.
 - (3) Statement I is false but Statement II is true.
 - (4) Both Statement I and Statement II are true.
27. Which of the following features cannot be associated with Ti-plasmid of *Agrobacterium tumefaciens* which is modified into a cloning vector?
- (1) Deliver genes of our interest into a variety of plants
 - (2) Transfer a piece of T-DNA into the plant cells
 - (3) Pathogenic to the plants
 - (4) A natural genetic engineer
28. Manipulation in gene has been made possible because of the;
- (1) Discovery of restriction endonuclease
 - (2) Development of method for production of rDNA
 - (3) Development of method for production of the desired gene
 - (4) All of these
29. Which of the following steps are catalysed by *Taq* polymerase in a PCR reaction?
- (1) Denaturation of template DNA
 - (2) Annealing of primers to template DNA
 - (3) Extension of primer end on the template DNA
 - (4) All of these
30. Protein encoded gene *cryIAb* controls;
- (1) Cotton bollworm
 - (2) Beetles
 - (3) Corn borer
 - (4) Flies.
31. **Statement I:** The bulbourethral gland is a male accessory gland.
Statement II: Its secretion helps in the lubrication of the penis, thereby facilitating reproduction.
- (1) Both statement I and statement II are correct.
 - (2) Statement I is incorrect but statement II is correct.
 - (3) Statement I is correct but statement II is incorrect.
 - (4) Both Statement I and statement II are incorrect.
32. **Statement I:** Each seminiferous tubule is lined on its inside by three types of cells.
Statement II: These cells are male germ cells, sertoli cells and leydig cells.
- (1) Both statement I and statement II are correct.
 - (2) Statement I is incorrect but statement II is correct.
 - (3) Statement I is correct but statement II is incorrect.
 - (4) Both statement I and statement II are incorrect.
33. The use of bioresources by multinational companies and other organisations, without proper authorisation from the countries and people concerned without compensatory payment, is called
- (1) Bioethics
 - (2) Biopiracy
 - (3) Bioterror
 - (4) Bioweapon
34. Which of the following statements is **true** about diseases and immunisation?
- (1) If due to some reason, B-and T-lymphocytes are damaged, the body will not produce antibodies against a pathogen.
 - (2) Injection of dead / inactivated pathogens causes passive immunity.
 - (3) Certain protozoans have been used to mass production of hepatitis - B vaccine.
 - (4) Injection of snake antivenom against snake bite is an example of active immunisation.



35. **Assertion (A):** Size of thymus increases with the advancement of age.

Reason (R): Thymosin secretion has no role in immunity.

- (1) Both assertion and reason are true and the reason is a correct explanation of the assertion.
- (2) Both assertion and reason are true but the reason is not a correct explanation of the assertion.
- (3) Assertion is true but reason is false.
- (4) Both assertion and reason are false.

SECTION-B

36. Vasa efferentia connects;

- (1) Testes and epididymis
- (2) Kidney and urinary bladder
- (3) Testes and ureter
- (4) Seminiferous tubules and testicular lobules

37. Which of the following events occurs at the same time when menstruation is beginning?

- (1) The levels of LH and FSH are spiking.
- (2) The levels of estrogen and progesterone in the ovarian hormone cycle are on the rise.
- (3) The corpus luteum is degenerating.
- (4) Ovulation is occurring.

38. Primary sex organs differ from the secondary sex organs in all the following, except:

- (1) They produce gametes
- (2) They secrete sex hormones
- (3) They are concerned with the conduction of gametes
- (4) Testes in male and ovaries in female are the examples of primary sex organs

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

List-I			List-II
(A)	Pill	(I)	Phagocytosis of sperms
(B)	Condom	(II)	Prevent ovulation
(C)	Vasectomy	(III)	Prevent sperms from reaching cervix
(D)	IUD	(IV)	Semen contains no sperms

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

40. Given below are two statements: one is labelled as Assertion (A) and other is labelled as Reason (R).

Assertion (A): Amniocentesis for sex determination is one of the strategies of Reproductive and child health care programme.

Reason (R): Ban on amniocentesis checks increasing menace of female foeticide.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) Both (A) and (R) are true and (R) is not the correct explanation of (A).
- (2) (A) is true but (R) is false.
- (3) (A) is false but (R) is true.
- (4) Both (A) and (R) are true and (R) is the correct explanation of (A).

41. According to Lamarckism, long-necked giraffes evolved because;

- (1) nature selected only long-necked ones.
- (2) humans preferred only long-necked ones.
- (3) short necks suddenly changed into long necks.
- (4) of stretching of necks over many generations by short necked ones.

42. Read the following three statements (a) – (c) and mark the **correct** option.

- (a) The thorns of *Bougainvillea* and tendrils in *cucurbita* represent divergent evolution.
- (b) The similarity in the eyes of octopus and monkeys is the result of convergent evolution.
- (c) The potato and sweet potato are the examples of homology.

- (1) (a) and (b)
- (2) (b) and (c)
- (3) (a) and (c)
- (4) All of these

43. Founder effect is due to;

- (1) Genetic drift
- (2) Isolation
- (3) Gene pool
- (4) Gene flow

44. A person without thymus would **not** be able to;

- (1) Reject a tissue transplant
- (2) Receive a tissue transplant
- (3) Develop an inflammatory response
- (4) Produce antibodies



45. Which of the following statements is **correct**?
- (1) Malignant tumors may exhibit metastasis.
 - (2) Patients who have undergone surgery are given cannabinoids to relieve pain.
 - (3) Benign tumors show metastasis.
 - (4) Caffeine acts as sedative.

46. Identify the **true** statements.
- (a) Abstinence from drugs of dependence causes withdrawal symptoms.
 - (b) Chikungunya is confirmed by Widal test.
 - (c) Rheumatoid arthritis which affects many people in our society is an autoimmune disease.
 - (d) AIDS was first reported in 1981 and is caused by a member of a group of viruses called retroviruses.
 - (e) Malignant tumours shows the property of metastasis.
 - (f) Cocaine is a powerful stimulant.
- (1) (a), (b) and (e)
 - (2) (a), (c), (d), (e) and (f)
 - (3) (c), (e) and (f)
 - (4) (c), (d) and (e)

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

List-I		List-II	
(A)	Bt cotton	(I)	Gene therapy
(B)	ADA	(II)	Cellular defence
(C)	RNAi	(III)	Detection of HIV infection
(D)	PCR	(IV)	<i>Bacillus thuringiensis</i>

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

48. Select the **correct** option describing gonadotropin activity in a normal pregnant female.

- (1) High level of FSH and SH stimulates the thickening of endometrium.
- (2) High level of FSH and SH facilitates implantation of the embryo.
- (3) High level of hCG stimulates the synthesis of estrogen and progesterone.
- (4) High level of hCG stimulates the thickening of endometrium.

49. 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.

50. **Assertion (A):** In gel electrophoresis, "the larger the fragment size, the farther it moves".

Reason (R): The separation and ligation of DNA segments by cutting out the gel is known as elution.

- (1) Both assertion and reason are true and the reason is a correct explanation of the assertion.
- (2) Both assertion and reason are true but the reason is not a correct explanation of the assertion.
- (3) Assertion is true but reason is false.
- (4) Both assertion and reason are false

