Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Second Semester)
(NEP) EXAMINATION, 2025-26
ZOOLOGY
(Reproductive and Developmental Biology)

Paper Code							
B	0	5	0	8	0	3	T

Questions Booklet Series
D

Time : 1:30 Hours] [*Maximum Marks : 75*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.

3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।

2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।

3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) **(शेष निर्देश अन्तिम पृष्ठ पर)**

(Only for Rough Work)

1. The cortical reaction prevents :

(A) Cleavage

(B) Gastrulation

(C) Polyspermy

(D) Implantation

2. The acrosomal reaction helps sperm to :

(A) Swim faster

(B) Penetrate zona pellucida

(C) Divide rapidly

(D) Attach to uterus

3. Fertilization usually occurs in which part of the female reproductive tract?

(A) Uterus

(B) Cervix

(C) Ampulla of fallopian tube

(D) Vagina

4. Cytoplasmic determinants are :

(A) Nuclear proteins only

(B) Molecules in egg cytoplasm that influence cell fate

(C) Hormones from placenta

(D) Ribosomes

5. Genomic equivalence means that :

(A) All cells have different DNA

(B) Only germ cells have DNA

(C) All somatic cells contain the same genetic information

(D) DNA is lost during differentiation

6. Cell lineage refers to :

(A) Evolution of species

(B) Sequence of cell divisions producing descendant cells

(C) Organ formation

(D) Apoptosis

7. Cell fate map shows :

(A) Genetic mutation

(B) Future developmental destiny of embryonic cells

(C) Blood circulation

(D) Hormonal levels

8. Morphogenetic gradients provide cells with :

(A) Energy

(B) Oxygen

(C) Positional information

(D) Nutrients

9. Competence is the ability of a cell to :

(A) Divide rapidly

(B) Respond to inductive signals

(C) Undergo apoptosis

(D) Migrate

10. Induction in development means :

(A) One tissue influences the development of another

(B) Cell death

(C) Mutation

(D) Hormone secretion only

11. Differentiation refers to :

(A) Cell division

(B) Acquisition of specialized structure and function

(C) DNA replication

(D) Fertilization

12. Determination differs from specification because determination is :

(A) Reversible

(B) Temporary

(C) Irreversible

(D) Weak

13. Specification is a stage where a cell :

(A) is irreversibly determined

(B) can differentiate autonomously in a neutral environment

(C) loses its nucleus

(D) stops dividing

14. Commitment of a cell means :

(A) Cell death

(B) Irreversible specialization

(C) Process by which a cell becomes restricted in developmental potential

(D) Cell migration

15. HPV vaccine helps in prevention of :

(A) Ovarian cyst

(B) Cervical cancer

(C) Endometriosis

(D) Fibroids

16. A common symptom of endometriosis is :

(A) Painless menstruation

(B) Severe pelvic pain

(C) High blood pressure

(D) Hair loss

17. Prostate cancer affects :

(A) Female reproductive system

(B) Male reproductive gland

(C) Kidney

(D) Liver

18. Pelvic inflammatory disease (PID) is usually due to :

(A) Bacterial infection

(B) Vitamin deficiency

(C) Stress

(D) Cancer

19. In vitro fertilization (IVF) involves fertilization in :

(A) Uterus

(B) Fallopian tube

(C) Laboratory dish

(D) Cervix

20. Intrauterine insemination (IUI) is a type of :

(A) Natural contraception

(B) Assisted Reproductive Technology (ART)

(C) Surgical sterilization

(D) Hormone therapy

21. Chronic endometritis is caused by :

(A) Genetic mutation

(B) Chronic infection of endometrium

(C) Excess estrogen

(D) Trauma only

22. Uterine fibroids are usually :

(A) Malignant tumors

(B) Benign smooth muscle tumors

(C) Viral infections

(D) Hormonal glands

23. Endometriosis refers to :

(A) Infection of uterus

(B) Endometrial tissue outside uterus

(C) Fibroid growth

(D) Ovarian cyst

24. Cervical cancer is most commonly associated with infection by :

(A) Hepatitis B virus

(B) Influenza virus

(C) Human papillomavirus (HPV)

(D) Dengue virus

25. HIV primarily affects the :

(A) Digestive system

(B) Immune system

(C) Reproductive organs only

(D) Nervous system

26. Which of the following is a common sexually transmitted disease?

(A) Diabetes

(B) Hypertension

(C) Gonorrhea

(D) Anemia

27. Premature ejaculation is a type of :

(A) Hormonal disorder

(B) Sexual dysfunction

(C) STD

(D) Cancer

28. Erectile disfunction in males is mainly related to problem in :

(A) Ovary

(B) Penis

(C) Uterus

(D) Fallopian tube

29. Morphogens are substances that :

(A) Kill cells

(B) Provide positional information to cells

(C) Stop cell division

(D) Form blood vessels

30. Induction during organogenesis refers to :

(A) Cell death

(B) Cell migration

(C) One tissue influencing development of another

(D) Fertilization process

31. The notochord is derived from :

(A) Ectoderm

(B) Mesoderm

(C) Endoderm

(D) Neural crest

32. Limb development in vertebrates is controlled by :

(A) Morphogen gradients

(B) Only hormones

(C) Only enzymes

(D) Ribosomes

33. Apoptosis plays an important role in :

(A) Increasing cell number

(B) Tissue differentiation only

(C) Shaping developing organs

(D) Fertilization

34. Which germ layer gives rise to the heart?

(A) Ectoderm

(B) Mesoderm

(C) Endoderm

(D) Amnion

35. The neural tube develops from which germ layer?

(A) Endoderm

(B) Mesoderm

(C) Ectoderm

(D) Trophoblast

36. The three primary germ layers are formed during :

(A) Cleavage

(B) Gastrulation

(C) Neurulation

(D) Implantation

37. Morphogenesis mainly refers to :

(A) Formation of gametes

(B) Development of shape and structure of organs

(C) DNA replication

(D) Cell death only

38. Organogenesis begins during which stage of embryonic development?

(A) Cleavage

(B) Blastulation

(C) Gastrulation

(D) Fertilization

39. Which phase of the menstrual cycle is characterized by progesterone dominance?

(A) Menstrual phase

(B) Follicular phase

(C) Ovulatory phase

(D) Luteal phase

40. Human chorionic gonadotropin (hCG) is produced by :

(A) Placenta

(B) Cytotrophoblast

(C) Decidua

(D) Corpus luteum

41. The second meiotic division in oogenesis completes at :

(A) Puberty

(B) Ovulation

(C) Fertilization

(D) Implantation

42. The primary source of estrogen during pregnancy is :

(A) Corpus luteum only

(B) Placenta

(C) Fetal adrenal gland only

(D) Ovarian follicles

43. Which of the following is NOT a function of progesterone?

(A) Maintains endometrium

(B) Inhibits uterine contractions

(C) Stimulates LH surge

(D) Prepares breast tissue for lactation

44. During spermiogenesis, which structure is formed from the Golgi apparatus?

(A) Axoneme

(B) Acrosome

(C) Mitochondrial sheath

(D) Manchette

45. In humans, fertilization normally occurs in the :

(A) Ampulla of fallopian tube

(B) Isthmus

(C) Uterus

(D) Cervix

46. The Graafian follicle primarily secretes :

(A) Progesterone

(B) Estrogen

(C) Relaxin

(D) Inhibin A only

47. Sertoli cells are stimulated by which hormone ?

(A) LH

(B) FSH

(C) Testosterone

(D) Estrogen

48. The process of capacitation in humans occurs in the :

(A) Testis

(B) Epididymis

(C) Vas deferens

(D) Female reproductive tract

49. The hormone primarily responsible for maintaining the corpus luteum in early pregnancy is :

(A) LH

(B) FSH

(C) hCG

(D) Prolactin

50. The acrosomal reaction in human sperm is primarily triggered by interaction with :

(A) Corona radiata

(B) Zona pellucida glycoprotein

(C) Oolemma

(D) Progesterone from uterus

51. The first stage of labour involves :

(A) Delivery of placenta

(B) Cervical dilation

(C) Expulsion of fetus

(D) Lactation

52. Which of the following statements accurately distinguishes a 'zygote' from an 'embryo' during the earliest stages of human reproduction ?

(A) A zygote is the single cell formed by fertilization, while an embryo is the multicellular structure resulting from its subsequent divisions.

(B) A zygote is a multicellular organism, while an embryo is a single specialized cell.

(C) A zygote is formed in the uterus, whereas an embryo is formed in the ovary.

(D) There is no biological distinction; the terms are completely interchangeable.

53. Which symptom may occur with ovarian cysts?

(A) Pelvic pain

(B) Blurred vision

(C) Hearing problem

(D) Skin infection

54. Which diagnostic method is commonly used to detect pelvic varicosities?

(A) Ultrasound

(B) ECG

(C) X-ray of teeth

(D) Eye examination

55. If the vas deferens in a human male is surgically blocked or severed, which of the following reproductive events will be directly prevented ?

(A) The production of nourishing fluids by the seminal vesicles.

(B) The secretion of testosterone by the testes into the bloodstream.

(C) The production of sperm cells in the testes.

(D) The transport of sperm from the testes to the urethra.

56. Menopause is defined as :

(A) Beginning of menstruation

(B) End of menstrual cycles

(C) Ovulation period

(D) Fertilization stage

57. Menopause usually occurs between the ages of :

(A) 20-30 years

(B) 30-40 years

(C) 45-55 years

(D) 60-70 years

58. The hormone detected in pregnancy tests is :

(A) Estrogen

(B) hCG

(C) FSH

(D) LH

59. The neonatal period refers to the first :

(A) 7 days after birth

(B) 14 days after birth

(C) 28 days after birth

(D) 60 days after birth

60. Milk ejection (let-down reflex) is controlled by :

(A) Oxytocin

(B) FSH

(C) LH

(D) Thyroxine

61. The hormone responsible for milk production is :

(A) Prolactin

(B) Estrogen

(C) Progesterone

(D) Testosterone

62. During the early development of an organism (morphogenesis), the process where cells become specialized in structure and function to form different tissues is called :

(A) Gestation

(B) Cellular differentiation

(C) Fertilization

(D) Pollination

63. The process of childbirth is called :

(A) Fertilization

(B) Gestation

(C) Parturition

(D) Implantation

64. Which hormone stimulates uterine contractions during labour?

(A) Oxytocin

(B) Progesterone

(C) Prolactin

(D) Testosterone

65. Which hormone maintains pregnancy during the early stages?

(A) Estrogen

(B) Progesterone

(C) Oxytocin

(D) Prolactin

66. Which symptom may occur with ovarian cysts?

(A) Pelvic pain

(B) Blurred vision

(C) Hearing problem

(D) Skin infection

67. The normal duration of human pregnancy is approximately :

(A) 200 days

(B) 240 days

(C) 280 days

(D) 320 days

68. Oncogenes are derived from :

(A) Tumor suppressor genes

(B) Proto-oncogenes

(C) Structural genes

(D) Ribosomal genes

69. Milk ejection (let-down reflex) is controlled by :

(A) Oxytocin

(B) FSH

(C) LH

(D) Thyroxine

70. The hormone mainly responsible for secondary sexual characteristics in males is :

(A) FSH

(B) LH

(C) Testosterone

(D) Estrogen

71. In boys, the first sign of puberty is :

(A) Appearance of facial hair

(B) Voice deepening

(C) Increase in testicular volume

(D) Growth spurt

72. The first visible sign of puberty in girls is usually :

(A) Menarche

(B) Growth spurt

(C) Breast development (thelarche)

(D) Pubic hair growth

73. The onset of puberty in humans is primarily triggered by :

(A) Increased thyroid hormone secretion

(B) Activation of the hypothalamic-pituitary-gonadal (HPG) axis

(C) Adrenaline surge

(D) Decrease in growth hormone

74. The 'Grandmother Hypothesis' suggests that :

(A) Older males increase reproductive success

(B) Post-menopausal women reduce population growth

(C) Grandmothers enhance survival of grandchildren

(D) Humans reproduce asexually in old age

75. Sexual dimorphism in humans is best explained by :

(A) Genetic drift only

(B) Artificial selection

(C) Sexual selection

(D) Random mutation

76. In evolutionary terms, human reproductive success is best measured by :

(A) Number of mates

(B) Lifespan

(C) Number of surviving offspring

(D) Physical attractiveness

77. Experimental embryology mainly studies :

(A) Adult physiology

(B) Developmental mechanisms

(C) Ecology

(D) Taxonomy

78. The dorsal lip of blastopore acts as :

(A) Neural tube

(B) Organizer

(C) Blastocoel

(D) Placenta

79. Spemann and Mangold experiment demonstrated :

(A) Cleavage

(B) Organizer concept

(C) Fertilization

(D) Mutation

80. Isolation experiment is used to test :

(A) Totipotency

(B) Implantation

(C) Fertilization

(D) Meiosis

81. Extirpation helps to study :

(A) Cell lineage

(B) Function of removed part

(C) Cleavage pattern

(D) Fertilization

82. Extirpation means :

(A) Staining tissue

(B) Removing a part of embryo

(C) Transplanting tissue

(D) Injecting dye

83. A commonly used vital dye is :

(A) Hematoxylin

(B) Eosin

(C) Nile blue

(D) Safranin

84. Vital staining is used to :

(A) Kill embryo

(B) Study living cell fate

(C) Fix tissues

(D) Stop cleavage

85. The cavity formed during gastrulation is called :

(A) Blastocoel

(B) Archenteron

(C) Coelom

(D) Neural canal

86. The primary germ layers are :

(A) Ectoderm, mesoderm, endoderm

(B) Epidermis, dermis, hypodermis

(C) Somite, notochord, neural tube

(D) Chorion, amnion, allantois

87. Gastrulation results in formation of :

(A) Two germ layers

(B) Three germ layers

(C) Blastocoel

(D) Neural crest

88. The inner cell mass of mammalian blastocyst forms :

(A) Placenta

(B) Chorion

(C) Embryo proper

(D) Yolk sac only

89. In mammals, blastula stage is called :

(A) Morula

(B) Gastrula

(C) Blastocyst

(D) Neurula

90. The cavity of blastula is called :

(A) Archenteron

(B) Blastocoel

(C) Coelom

(D) Amnion

91. The morula transforms into blastula by formation of :

(A) Archenteron

(B) Blastopore

(C) Blastocoel

(D) Neural tubé

92. Morula resembles :

(A) Hollow ball

(B) Solid ball of cells

(C) Disc

(D) Tube

93. Morula stage consists of approximately :

(A) 2-4 cells

(B) 8-16 cells

(C) 64-128 cells

(D) 200 cells

94. Radial cleavage is typical of :

(A) Annelids

(B) Molluscs

(C) Echinoderms

(D) Arthropods

95. Blastomeres are formed during :

(A) Gastrulation

(B) Organogenesis

(C) Cleavage

(D) Fertilization

96. What happens in the human female body if the released egg is NOT fertilized ?

(A) The uterus prepares a thicker lining for the next cycle immediately without bleeding

(B) The thick and spongy lining of the uterus breaks down, causing bleeding

(C) The egg immediately develops into a zygote on its own

(D) The egg remains permanently stored in the fallopian tube

97. Why are the human testes located outside the abdominal cavity within the scrotum ?

(A) To protect them from mechanical injury

(B) To increase the secretion rate of testosterone

(C) To maintain a lower temperature required for sperm formation

(D) To facilitate the easy release of sperms into the vas deferens

98. Holoblastic cleavage is seen in :

(A) Birds

(B) Reptiles

(C) Mammals

(D) Fishes with large yolk

99. Cleavage divisions are characterized by :

(A) Increase in cell size

(B) No increase in overall embryo size

(C) DNA reduction

(D) Meiosis

100. Fusion of male and female pronuclei is called :

(A) Syngamy

(B) Cleavage

(C) Capacitation

(D) Implantation

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।