

CAREERS 360

MBSE HSSLC BIOLOGY

2014

MODEL QUESTION PAPER

BIOLOGY

1. Natural genetic engineer is
 - (A) *Pseudomonas putida*
 - (B) *Agrobacterium tumefaciens*
 - (C) *Escherichia coli*
 - (D) *Bacillus thuringiensis*
2. Trypsin, Chymotrypsin, Carboxypeptidase are
 - (A) Nucleases
 - (B) Carbohydrases
 - (C) Lipids
 - (D) Proteases
3. Which of the following air pollutant is not a primary pollutant ?
 - (A) Carbon monoxide
 - (B) Peroxyacetyl nitrate
 - (C) Nitrogen oxides
 - (D) Hydrocarbons
4. The region of chloroplast where enzymes for dark reaction are located is
 - (A) Membrane of thylakoid
 - (B) Grana
 - (C) Stroma
 - (D) Lamellae
5. ‘Saheli’ an oral contraceptive for female contains a non-steroidal preparation called
 - (A) DMPA
 - (B) interferon
 - (C) centchroman
 - (D) retrovirus
6. How many male gametes are formed in pollen tube of angiosperms ?
 - (A) One
 - (B) Two
 - (C) Three
 - (D) Four
7. Organisms which are unable to maintain their body at constant temperature are known as
 - (A) homiothermic
 - (B) poikilothermic
 - (C) endothermic
 - (D) eurythermal

8. Primitive anaerobic organisms that depended upon organic molecules of broth or hot dilute soup were

(A) autotrophs (B) chemoheterotrophs
(C) photoautotrophs (D) heterotrophs

9. Which of the following acts as Microtubule Organizing Centres (MTOC's) during formation of spindle fibres ?

(A) Microfilaments (B) Centrioles
(C) Centromere (D) Cillium

10. The technique by which the semen collected from the husband or donor is artificially introduced into either the vagina or uterus is called

(A) ICSI (B) IUI
(C) GIFT (D) IVF

11. Net Primary Productivity refers to the

(A) total organic matter produced including those used for respiration
(B) balance energy or biomass remaining after meeting the cost of respiration of producers
(C) energy accumulated by plants during photosynthesis
(D) amount of biomass produced by plants per unit area

12. Ginger reproduces vegetatively by

(A) tubers (B) corms
(C) bulbs (D) rhizome

13. During relaxation of the muscles Ca^{++} is pumped

(A) back into the sarcoplasmic reticulum
(B) out of the sarcoplasmic reticulum
(C) back into the sarcomere
(D) out of the sarcomere

14. Transfer of DNA bands from Agarose gel to nitrocellulose membrane is known as
(A) Southern blotting (B) Western blotting
(C) Northern blotting (D) Eastern blotting

15. Severe combined immunodeficiency (SCID) results from the absence of
(A) B-cells (B) T-cells
(C) macrophages (D) both (A) & (B)

16. Dumb-bell shaped guard cells are seen in
(A) rose (B) rice
(C) apple (D) mango

17. The cyanobacterium *Anabaena azollae* lives in association with
(A) roots of *Mangifera indica* (B) leaves of a floating fern
(C) roots of pine trees (D) bacteria and fungi

18. If DNA has 10 spirals, the length of DNA will be
(A) 34 \AA° (B) 64 \AA°
(C) 340 \AA° (D) 640 \AA°

19. The daughter chromatids are pulled towards the opposite sides by shortening the spindle fibres during
(A) Prophase (B) Metaphase
(C) Telophase (D) Anaphase

20. Long-day plants do not flower when
(A) light period exceeds a certain critical length of the day
(B) short night is interrupted by flashes of light
(C) a long day is interrupted by brief dark period
(D) a short day is followed by a long night

21. Chiropterophily is pollination by
(A) insects (B) bats
(C) animals (D) birds

22. The site within the nucleus where ribosomal RNA is synthesised is
(A) Euchromatin (B) Nucleoplasm
(C) Nuclear pore (D) Nucleolus

23. Which of the following two codons have a double function ?
(A) AUG, GUG (B) UAA, UGA
(C) UGA, GUG (D) UAA, AUG

24. *Taenia solium* belongs to the Phylum
(A) Platyhelminthes (B) Aschelminthes
(C) Annelida (D) Echinodermata

25. The female genital pore of earthworm is present on the
(A) 18th segment (B) 14th segment
(C) 6th segment (D) 5th segment

26. Number of gamete types produced by genotype AaBbCcDd will be
(A) 4 (B) 8
(C) 16 (D) 32

27. Teratogenicity is
(A) malformation of foetus (B) induced parthenocarpy
(C) tumour forming action of the drugs (D) chronic dependence on alcohol

28. *Pisum sativum* belongs to the family
(A) Solanaceae (B) Liliaceae
(C) Fabaceae (D) Malvaceae

29. In buffer zone of a biosphere reserve

(A) large number of human activities are permitted
(B) no human activity is permitted
(C) limited human activities are permitted
(D) active cooperation between reserve management and local people is permitted

30. The lubricant present in joints, that reduces friction during movement is

(A) ligament (B) tendon
(C) synovial fluid (D) glenoid fossa

31. In gel electrophoresis, differential mobility of DNA depends upon

(A) helical nature of DNA
(B) double stranded nature of DNA
(C) charge and size of DNA
(D) hydrogen bonding between bases

32. Fowl pox is caused by

(A) ectoparasites (B) endoparasites
(C) bacteria (D) virus

33. In birds, the heart is

(A) two chambered
(B) four chambered
(C) three chambered with two auricles and one ventricle
(D) three chambered with one auricle and two ventricles

34. Phenotypic and genotypic ratio of 1 : 2 : 1 in F_2 generation is found in

(A) *Neurospora crassa* (B) *Lathyrus odoratus*
(C) *Pisum sativum* (D) *Mirabilis jalapa*

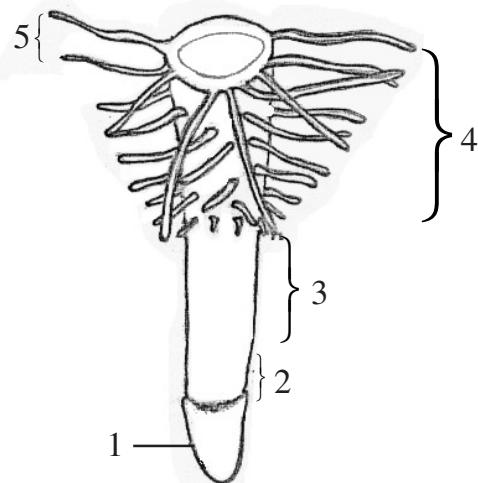
35. *Chlamydia trachomatis* causes

(A) trachoma (B) urethritis
(C) STD (D) all of these

36. In non-cyclic photophosphorylation

(A) only photosystem I is involved
(B) both photosystem I and photosystem II are involved
(C) only photosystem II is involved
(D) neither photosystem I nor photosystem II is involved

37. The different regions of a root are as shown below



The correct labelling of 1, 2, 3, 4 and 5 is

(A) 1- root cap, 2 - region of meristematic activity, 3 - region of maturation,
4 - region of elongation, 5 - root hair

(B) 1 - root cap, 2 - region of maturation, 3 - region of meristematic activity,
4 - region of elongation, 5 - root hair

(C) 1 - root cap, 2 - region of elongation, 3 - region of meristematic activity,
4 - region of maturation, 5 - root hair

(D) 1 - root cap, 2 - region of meristematic activity, 3 - region of elongation,
4 - region of maturation, 5 - root hair

38. Empty circle symbols used in pedigree analysis represents

(A) normal females (B) normal males
(C) affected females (D) affected males

39. A drug morphine is extracted from

(A) *Cinchona ledgeriana* (B) *Taxus baccata*
(C) *Papaver somniferum* (D) *Lantana camara*

40. Plasmids are used as vectors in genetic engineering because of their

(A) resistance to antibiotics
(B) resistance to restriction endonucleases
(C) ability to carry foreign genes
(D) ability to shuttle between prokaryotic and eukaryotic cell

41. Mamalian teeth embedded in the jaw socket is termed as

(A) homodont (B) heterodont
(C) diphyodont (D) thecodont

42. The quietest sound that the human ear can detect is called

(A) threshold of pain (B) threshold of sound
(C) threshold of hearing (D) threshold of noise

43. Abstinence from coitus from 10th to 17th day of menstrual cycle to prevent pregnancy is called

(A) coitus interruptus (B) periodic abstinence
(C) amniocentesis (D) lactational amenorrhea

44. Myopia is corrected by wearing

(A) contact lens (B) convex lens
(C) convergent lens (D) concave lens

45. Blue eye colour is recessive to brown eye colour. A brown eyed man whose mother was blue-eyed marries a blue-eyed woman. The children will be

(A) all brown eyed
(B) all blue eyed
(C) 3 blue eyed : 1 brown eyed
(D) 1 blue eyed : 1 brown eyed

46. A circular pigmented area of skin present on the breast around the nipples is called

(A) areola (B) mesovarium
(C) cumulus (D) membrane granulosa

47. The type of osmoregulation found in cockroach is

(A) Ureotelism (B) Ammonotelism
(C) Uricotelism (D) Aminotelism

48. Choose the correct sequence

(A) Palaeozoic —→ Proterozoic —→ Coenozoic
(B) Mesozoic —→ Palaeozoic —→ Proterozoic
(C) Palaeozoic —→ Mesozoic —→ Coenozoic
(D) Mesozoic —→ Coenozoic —→ Proterozoic

49. Acetyl CoA is produced from pyruvic acid by

(A) oxidative decarboxylation
(B) oxidative photophosphorylation
(C) oxidative hydrogenation
(D) oxidative photorespiration

50. Breaking down of glucose to lactic acid is an example of

(A) Anabolic pathway (B) Isomerisation
(C) Polymerisation (D) Catabolic pathway

51. Which of the following statements is wrong ?

(A) Energy lost as heat or respiration cannot be transferred to any living organism
(B) Trophic levels in an ecosystem are usually limited to 4-5 only
(C) Only 15% of energy is made available to the next higher trophic level
(D) Detritus food chain begins with dead organic matter

52. The abdominal passage which connects the abdominal cavity with the scrotal sac in mammals is

(A) inguinal canal (B) haversian canal
(C) neurenteric canal (D) spermatic canal

53. Deuteromycetes are also called imperfect fungi because they

(A) form a diploid zygospore during sexual reproduction
(B) reproduce only sexually
(C) reproduce only asexually
(D) reproduce both by sexual and asexual means

54. In operon model, RNA polymerase binds to

(A) structural gene (B) promoter gene
(C) regulator gene (D) operator gene

55. Which of the following is incorrectly matched ?

(A) Explant - excised plant part used for callus formation
(B) Callus - an unorganised mass of cells
(C) Anther culture - haploid plants
(D) Cytokinins - formation of yeast

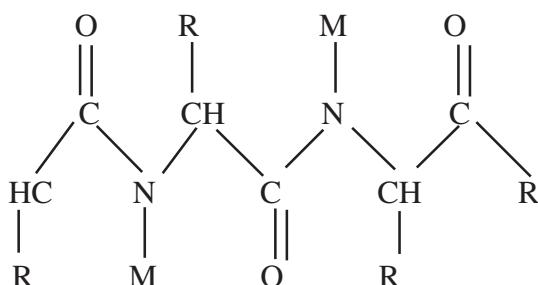
56. The major centre for regulation of body temperature, thirst and hunger within the brain is

(A) cerebellum (B) hypothalamus
(C) pons (D) cerebrum

57. Proliferative phase coincides with the

(A) ovulatory phase (B) luteal phase
(C) follicular phase (D) secretory phase

58.



is the structure of

59. Animal's ability to hide itself from predators and prey by blending with the surroundings is called

(A) camouflage (B) mimicry
(C) hibernation (D) aestivation

60. According to Big Bang theory, the earth's early atmosphere was mainly formed by

(A) hydrogen, nitrogen, water vapour, carbon dioxide
(B) hydrogen, nitrogen, methane, carbon dioxide
(C) nitrogen, methane, water vapour, carbon dioxide
(D) ammonia, nitrogen, carbon dioxide, methane

61. In osmosis, water molecules moves from a region of

(A) their high concentration to their low concentration
(B) concentrated solution to dilute solution
(C) lower water potential to higher water potential
(D) lower temperature to higher temperature

62. The amount of energy released on hydrolysis of ATP to ADP is

(A) 30.6 KJ (B) 50.6 KJ
(C) 20.6 KJ (D) 40.6 KJ

63. Genes do not occur in pairs in

(A) zygote (B) somatic cell
(C) endosperm cells (D) gametes

64. Contraction of uterine smooth muscles during parturition is caused by

(A) Vasopressin (B) Oxytocin
(C) Oestrogen (D) Progesterone

65. Human placenta is formed from

(A) ectoderm (B) trophoblast
(C) endoderm (D) mesoderm

66. The function of adipose tissue includes

(A) formation of an insulating layer, prevention of heat loss
(B) excretion, absorption and secretion
(C) diffusion of materials and exchange of gases across the membrane
(D) increase surface area for absorption

67. Which of the following element is a macroelement/macronutrient ?

(A) Manganese (B) Magnesium
(C) Molybdenum (D) Chlorine

68. Allopatric speciation is caused by

(A) temporal isolation (B) adaptive radiation
(C) geographic isolation (D) reproductive isolation

69. In a human kidney the glomeruli of nephrons are present in

(A) renal cortex (B) renal medulla
(C) renal pelvis (D) distal nephron

70. An association of two species where both the species are benefited is known as

(A) parasitism (B) amensalism
(C) mutualism (D) commensalism

71. After fertilization, seed coats of seed develop from

(A) embryo sac (B) ovule
(C) integuments (D) chalazal region

72. The first product of photosynthesis in a plant having Kranz anatomy is

(A) phosphoglyceric acid (B) pyruvic acid
(C) oxaloacetic acid (D) succinic acid

73. Sir Alexander Fleming extracted penicillin from

(A) *Penicillium notatum* (B) *Penicillium leprasum*
(C) *Penicillium ovalin* (D) *Bacillus brevis*

74. The phenomenon which disobeys the independent assortment is

(A) segregation (B) crossing over
(C) dominance (D) linkage

75. Which of these are bacterial diseases ?

(A) tetanus, typhoid, tuberculosis (B) small pox, influenza, tetanus
(C) meningitis, measles, syphilis (D) none of the above

76. The technique in which foreign DNA is precipitated over surface of metal particles for passing into target cells is

- microinjection
- electroporation
- particle gun
- chemical mediated gene transfer

77. The neck of the carpel to which stigma is attached is

- ovary
- thalamus
- ovule
- style

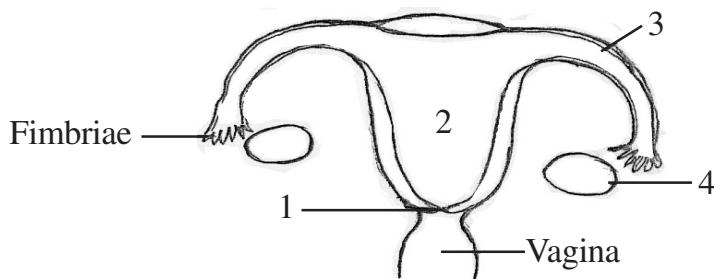
78. The similarity between catalysts and enzymes is that they

- both initiate a reaction
- both alter the equilibrium
- are both required in minute quantities
- both make long-lived complexes with the reactants

79. Purines of DNA are

- adenine and cytosine
- adenine and guanine
- thymine and guanine
- adenine and thymine

80. In the given diagram, parts of a female reproductive system are marked by 1, 2, 3 and 4



The correct labelling of 1, 2, 3 and 4 is

- 1-oviduct, 2-uterus, 3-ovary, 4-cervix
- 1-cervix, 2-ovary, 3-uterus, 4-oviduct
- 1-uterus, 2-cervix, 3-fallopian tube, 4-tumour
- 1-cervix, 2-uterus, 3-fallopian tube, 4-ovary

81. Spirulina is

(A) gobar gas (B) biofertiliser
(C) single cell protein (D) biopesticide

82. SCID is caused by defective gene coding for the enzyme

(A) Adenosine deaminase (B) Adenosine transaminase
(C) Adenosine transferase (D) Guanosine transaminase

83. Identify the correct sequence

(A) kingdom-class-phylum-order-family-genus-species
(B) phylum-kingdom-class-family-order-genus-species
(C) kingdom-phylum-class-order-family-genus-species
(D) kingdom-phylum-class-family-order-genus-species

84. Store house of energy in plant tissue is

(A) Starch (B) Glycogen
(C) Chitin (D) Fats

85. Frame shift mutation is caused by change in nucleotide sequence which is due to

(A) deletion and repetition (B) deletion and insertion
(C) insertion and duplication (D) duplication and repetition

86. The substance used for solidification of nutrient medium is

(A) 2, 5-D (B) *Agar agar*
(C) *Alfa alfa* (D) morphine

87. The double homozygous yellow round plant is crossed with green wrinkled plant. The offspring shall be of

(A) one type (B) two types
(C) four types (D) several types

88. The respiratory centre that primarily controls the switch off points of inspiration is

(A) Ventral respiratory centre
(B) Pneumotaxic centre
(C) Dorsal respiratory centre
(D) Antero lateral respiratory centre

89. Cocaine is derived from

(A) *Coffea arabica* (B) *Thea sinensis*
(C) *Erythroxylum coca* (D) *Cannabis coca*

90. In nitrogen fixation process, enzyme nitrite reductase is responsible for

(A) reduction of nitrate to nitrite
(B) reduction of nitrite ions to ammonium ions
(C) splitting of nitrogen molecule
(D) reductive ammoniation

91. Mendel selected garden pea as material for his experiments because

(A) it is an annual plant with comparatively short life cycle
(B) the flowers are self pollinated
(C) it is easily cross-pollinated
(D) all of the above

92. Central dogma of molecular biology was further improved/modified with the discovery of

(A) DNA ligase (B) RNA polymerase III
(C) DNA polymerase (D) Reverse transcriptase

93. When organic acids such as oxalic acid and malic acid are used as substrates, respiratory quotient (RQ) is

(A) less than 1 (B) exactly 1
(C) more than 1 (D) infinity

94. Nuclear division that results in the formation of two nuclei is
(A) Interphase (B) Karyokinesis
(C) Cytokinesis (D) Interkinesis

95. Which of the following amino acids was not found to be synthesised by Miller-Urey experiment ?
(A) Alanine (B) Glycine
(C) Glutamic acid (D) Aspartic acid

96. The stored carbohydrates in Brown algae is in the form of
(A) Floridean starch (B) Laminarin starch
(C) Phycocolloids (D) Chlorophycean starch

97. Which of the following statements is **not** true ?
(A) Ozone depletion can cause skin cancer
(B) CO_2 and CH_4 are greenhouse gases
(C) Ozone layer is present in the stratosphere between 20-26 km ASL
(D) Biomagnification is the process of nutrient enrichment of water resulting in loss of diversity

98. The anticoagulant present in blood which prevents the conversion of prothrombin to thrombin is
(A) Fibrin (B) Heparin
(C) Thromboplastin (D) Troponin

99. The pH of human semen is
(A) 4.5 - 5.5 (B) 6.5 - 6.8
(C) 7.2 - 8.0 (D) 8.2 - 8.5

100. The first naturally occurring cytokinin was chemically identified from
(A) *Oryza sativa* (B) *Zea mays*
(C) *Triticum vulgare* (D) *Fusarium moniliforme*