BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Bachelor of Science in Medical Lab Technology
Course Name – Genetics & Molecular Biology
Course Code - BMLT602
(Semester VI)

Time allotted : 1 Hrs.15 Min. **Full Marks : 60**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

Choose the correct alternative from the following :

(1) Gregor Mendel was:

a) An English scientist who carried out research with Charles Darwin
b) A little known Central European monk
c) An early 20th century Dutch biologist who carried out genetics research
d) Chainies monk researchon pea plant

(2) The crossing of F1 to homozygous recessive parent is called

a) Back cross
b) Test cross
c) F1 cross
d) All of these

(3) The test cross is used to determine the

a) Genotype of plant
b) Phenotype of plant
c) Both a & b
d) none of these

(4) The cross in which parents differ in two pairs of contrasting characters is called

a) Monohybrid cross
b) Dihybrid cross
c) Trihybrid cross
d) Tetrahybrid cross

(5) which of the following statements is true regarding the law of independent assortment

a) factors assort independent of each other when more than one pair of characters are present together
b) Independent assortment leads to variation
c) Independent assorment leads to formation of new combinations of charecters
d) all of these

(6) Each gametes carry

a) Only recessive allele
b) Only dominant allele

c) Only one of the alleles
d) All of these

(7) Who proposed the laws of inheritance in living organisms

a) Gregor Mendel
b) James Watson
c) Francis Crick
d) Erwin Chargaff

(8) The best method of determine the homozygosity and heterozygosity of an individual is

a) Self-fertilization
b) Back cross
c) Test cross
d) Inbreeding

(9) All of this obeys mendel's law s except

a) linkage
b) Independent assortment
c) Dominanace
d) Purity of gametes

(10) The genometrical device that helps to find out all the possible combinations of male and female gametes is called

a) Punnete square
b) Bateson square
c) Mendel square
d) Morgan square

(11) Which of the following bestexpresses the concept of the word Allele?

a) Genes for wrinkled and yellow
b) Genes for wrinkled and round
c) Phenotypes
d) The expression of a gene

(12) The inheritance of skin colour in humans is an example of which of the following?

a) Epistasis
b) Gene linkage
c) Polygeneic inheritance
d) Codominance

(13) In tobaco, if the diploid number of chromosomes is 48, how many chromosomes will be found in pellen grain?

a) 96
b) 48
c) 24
d) 12

(14) Which of the following gives information about the phenotype but not the genotype?

a) XHY
b) Hemophiliac man
c) tall pea plant
d) Female carrier for colour blindness

(15) Genetic traits of seeds are notes as follows L= long, l= short, W= wrinkled, w=smoothe Y= yellow, y= white R= ribbed r= grooved , Which of the following is the genotype for a short, wrinkled, yellow, grooved seed?

a) llWwyyrr
b) LLWWyYRr
c) LlWwYYRr
d) llWwYYrr

(16) The term chromosome was coined by _____.

a) Sutton
b) Boveri
c) Waldeyer
d) Hoffmeister

(17) Chromosomes found in the salivary gland of Drosophila is_____.

a) Polytene
b) Lampbrush
c) Supernumerary
d) B-chromosomes

(18) The centromere is that part of the chromosome where_____.

a) nicking are attached
b) Nucleoli are formed
c) crossing are formed
d) Chromatids are attached

(19) More than 200 chromosomes occur in_____.

a) Dog
b) Amoeba

c) Chicken
d) Gorilla

(20) What is the number of linkage groups in the Drosophila?

a) two
b) four
c) eight
d) none of these

(21) Gene for colour blindness in man is located on_____

a) Both X and Y
b) Y-chromosome only
c) X-chromosome only
d) Either X-chromosome or Y-chromosome

(22) Which of the following disease is sex-linked?

a) Hepatitis
b) leukaemia
c) Malignancy
d) Colour blindness

(23) A normal woman is married to a colour blind man. The children are expected to be

a) All normal
b) 50% sons are colour blind
c) All daughters are normal but carrier whereas all sons are normal phenotypically as well as genotypically
d) 50% daughters are colour blind

(24) Complete linkage is found in

a) Brids
b) Snakes
c) Female drosophila
d) Male drosophila

(25) Which one of the following character in man is controlled by a recessive gene?

a) Colour blindness
b) Woolly hair
c) Brachydactyly
d) Curly hairs

(26) A child is born to a mother whose blood group is A and a father whose blood group is B. The child is of blood group A. According to this which of the following is true?

a) The mother has Bombay blood group
b) The child's father is some other man
c) This is a normal case
d) The child has genotype IA/ IA

(27) Inheritance of ABO blood group system is an example of

a) dominance
b) epistasis
c) partial dominance
d) multiple allelism

(28) The recessive character typically is expressed only when present in a double recessive condition. But, a single recessive gene can express itself in humans when genes are found on

a) either on autosome or X chromosome
b) X chromosome of male
c) X chromosome of female
d) Any autosome

(29) To discover multiple allelism, it is essential to study _____

a) cells from an individual
b) organs from an individual
c) tissues from an individual
d) population

(30) If the blood group of an offspring is O, which of the following is not the correct parental genotypes?

a) IAIA, IAIB
b) IAi, Iai
c) IAi, IBi
d) ii, ii

(31) Aneuploidy is usually deleterious as_____

a) Chromosomal peiring is hampered
b) Gene balance is disrupted
c) Size of individual may vary
d) Chromosomal disintegration is increased

(32) _____aneuplody is better tolerated

a) Nullisomic
b) Autosomal
c) Sex chromosomal
d) Chromosome 13

(33) Representation of nulliosomic condition is

a) (2n + 1)
b) (2n + 2)
c) (2n – 1)
d) (2n – 2)

(34) Cri-du-chat syndrome is caused due to

a) deletion of one arm of 5th autosome
b) deletion of one arm of 6th autosome
c) deletion of one arm of 7th autosome
d) deletion of one arm of 8th autosome

(35) (44 + XXY) number of barr body is

a) 1 barr body
b) 2 barr body
c) 3 barr body
d) 4 barr body

(36) Hypogonadism is caused due to which syndrome

a) down syndrome
b) klinefelter syndrome
c) Turner's syndrome
d) cri-du-chat syndrome

(37) Which of the following is not a characteristic of RNA?

a) It has ribose sugar molecules in the nucleotides
b) It is a single stranded molecule
c) It is not stable under alkaline conditions
d) All the 3 types of RNA are involved in protein synthesis

(38) Which of the following criterion cannot be fulfilled by protein?

a) Formation of polypeptide chains
b) Generation of its replica
c) Formation of alpha helix and beta sheets
d) Non covalent bonds are present between amino acids

(39) Which of the following statements is correct regarding DNA and RNA?

a) DNA is highly reactive
b) RNA is not catalytic
c) RNA cannot be easily degraded
d) DNA is a better genetic material than RNA

(40) At what rate does the RNA mutate as compared to DNA?

a) Faster rate
b) Slower rate
c) Moderate rate
d) Depending on the medium

(41) In eukaryotes, which RNA polymerase makes rRNA?

a) RNA polymerase I
b) RNA polymerase II
c) RNA polymerase IV
d) RNA polymerase III

(42) Which of the following subunits of RNA polymerase is solely required for initiation of transcription?

a) β (beta)
b) α (alpha)
c) σ (sigma)
d) ω (omega)

(43) Which of the following codons is the mRNA start codon that initiates translation?

a) AUG
b) UAG
c) UAA
d) UGA

(44) Which of the following best describes the key function of helicases during transcription?

a) Re-annealing of two DNA strands once transcription and translation processes are
b) Catalyzing the interaction between transcription factors and the DNA strand.

complete.

c) Cleaving methyl groups from an unwound DNA strand.

d) Separation of two strands of DNA; "unwinding" gives polymerases access to the strand.

(45) Before RNA polymerase can initiate transcription, this protein must bind to it, creating the RNA polymerase holoenzyme and allowing for the initiation of transcription.

a) Activator protein
b) Beta factor
c) Sigma factor
d) Topoisomerase

(46) Protein synthesis in bacteria takes place on which of the following organelles?

a) Endoplasmic Reticulum
b) Golgi body
c) Ribosomes
d) Ribosomes

(47) The synthesis of polynucleotide chain of mRNA is catalyzed by the enzyme _____

a) RNA helicase
b) RNA polymerase
c) DNA polymerase
d) DNA helicase

(48) Which of the following is responsible for the initiation of RNA polymerase activity?

a) initiation site
b) promoter region
c) sigma factor
d) rho factor

(49) Which of the following are non-sense codons?

a) AUG
b) GUG
c) UAA
d) UCU

(50) Semi-conservative DNA replication was first demonstrated in _____

a) Drosophila melanogaster
b) Escherichia coli
c) Streptococcus pneumonae
d) Drosophila melanogaster

(51) What is the reaction in DNA replication catalyzed by DNA ligase?

a) Addition of new nucleotides to the leading strand
b) Addition of new nucleotide to the lagging strand
c) Formation of a phosphodiester bond between the 3'-OH of one Okazaki fragment and the 5'-phosphate of the next on the lagging strand
d) Base pairing of the template and the newly formed DNA strand

(52) Which enzyme used to join bits of DNA?

a) DNA polymerase
b) DNA ligase
c) Endonuclease
d) Primase

(53) Which of the following RNA molecules serves as anadaptor molecule during protein systhesis

a) rRNA
b) mRNA
c) tRNA
d) tRNA & mRNA

(54) In prokaryotes, the first amino acid in polypeptide chain is

a) Methionine
b) N-methyl methionine
c) N-formyl methionine
d) All of these

(55) During translation, the role of enzyme peptidyl transferase is

a) transfer of phophate group
b) amino acid activation
c) peptide bond formation between adjacent amino acid
d) binding of ribosome subunit to mRNA

(56) In eukaryotes the regions between 1st AUG and 5'G cap is known as _____

a) Leader
b) Attenuation
c) UTR
d) ORF

(57) CAAT box is present in many

a) Prokaryotic promoters upstream of TATA box
b) Prokaryotic promoters downstream of TATA box
c) Eukaryotic promoters upstream of TATA box
d) Eukaryotic promoters downstream of TATA box

(58) Mark the INCORRECT statement about mutation

a) Mutation is predestined
b) Major source of evaluation
c) Usually deleterious and recessive
d) It is a reversible process

(59) Which of the following is NOT a type of reverse mutation?

a) Back mutation
b) Intergenic suppressor mutation
c) Intragenic suppressor mutation
d) Missense mutation

(60) What is the detection technique of auxotrophs?

a) Spread plating
b) Replica plating
c) Streaking
d) Pouring