

Subject Code **0213**

BIOTECHNOLOGY (Core-13)

Question Booklet No.

Signature of Invigilator	To be filled in by candidate by ball-point pen only	OMR Sl. No. _____
	Roll No. _____	_____
Time of Examination	Declaration : I have read and understood the instructions given below.	
Date of Examination	Full Signature of Candidate	Full Marks : 80/50 Time : 1 hour
	Name of Candidate	

Number of Questions in the Booklet } **50/40**



UU 6th Semester Examination, 2020

INSTRUCTIONS TO CANDIDATES

- Immediately after getting the booklet read instructions carefully mentioned on the front and back page of the Question Booklet. Do not open the seals unless asked by the Invigilator.
- Write your Roll No., OMR Response Sheet No., in the specified places given above and put your signature.
- Write the subject code of the booklet in your OMR Sheet.
- Make all entries in the OMR Response Sheet as per the given instructions; otherwise OMR Response Sheet will not be evaluated.
- After opening the seals, ensure that the Question Booklet contains total no. of pages as mentioned above and printing of all the **50 / 40** questions are proper. If any discrepancy is found, inform the invigilator within **15** minutes and get the correct Question Booklet.
- For each question in the Question Booklet choose the correct option from the given four alternatives and darken the same circle in the OMR Response Sheet with Black or Blue ball-point pen.
- Darken the circle of correct answer properly; otherwise answers will not be evaluated. The candidate will be fully responsible for it.
- If more than one option is darkened for a particular question, then it will be treated as wrong answer.
- After completion of the examination, only OMR Response Sheet is to be handed over to the invigilator.

THERE IS NO NEGATIVE MARKING FOR WRONG ANSWER

BIOTECHNOLOGY (CORE-13)

(Answer any 40 questions)

- 1 If proteins are separated according to their electrophoretic mobility, then the type of electrophoresis is:
 - (A) Affinity Electrophoresis
 - (B) Electro focusing
 - (C) Free flow electrophoresis
 - (D) SDS-PAGE
- 2 Western blotting is the technique for the detection of
 - (A) specific DNA in a sample
 - (B) specific RNA in a sample
 - (C) specific glycolipid in a sample
 - (D) specific protein in a sample
- 3 Electric field is used in separating chemicals in
 - (A) Electrophoresis
 - (B) Ion exchange chromatography
 - (C) Thin layer chromatography
 - (D) Column chromatography
- 4 Which of the following technique is used in DNA finger printing?
 - (A) Western blotting
 - (B) Northern blotting
 - (C) Southern blotting
 - (D) Eastern blotting
- 5 Labeled Antibodies are used to detect
 - (A) detect the presence of a particular protein molecule in Western blotting
 - (B) detect the presence of a particular DNA molecule in Southern blotting
 - (C) detect the presence of a particular RNA molecule in Southern blotting
 - (D) detect the presence of a particular protein molecule in Southern blotting
- 6 Which technique separates charged particles using electric field?
 - (A) Hydrolysis
 - (B) Protein synthesis
 - (C) Protein denaturing
 - (D) Electrophoresis
- 7 Nanobiotechnology deals with materials of the size _____ m.
 - (A) 1 / 100000000
 - (B) 1 / 10000000
 - (C) 1 / 1000000000
 - (D) 1 / 10000000000
- 8 Which of the following technique is most suitable for detecting the presence of a gene product
 - (A) Western blotting
 - (B) Dot blotting
 - (C) Southern blotting
 - (D) plaque blotting

- 9 Which of the following is the formula for pH calculation?
- $\log_{10}[\text{H}^+]$
 - $\log_2[\text{H}^+]$
 - $-\log_2[\text{H}^+]$
 - $-\log_{10}[\text{H}^+]$
- 10 Expand HPLC.
- High Performance Liquid Chromatography
 - High Protein Liquid Chromatography
 - High Pressure Liquid Chromatography
 - High Performance Liquid Cytometry.
- 11 The pH of a liquid solution is a measure of:
- Dissolved salt content
 - Hydroxyl ion molarity
 - Hydrogen ion activity
 - Electrical conductivity
- 12 Which compound is hold by stationary phase?
- Non polar compound
 - Polar compound
 - A and B
 - None of the above
- 13 For the better resolution of minute protein bands in SDS-PAGE, which of the following staining method is advised?
- Silver staining
 - CBB Staining
 - Avidin staining
 - All of these
- 14 Electrophoresis cannot be used to separate ____
- DNA
 - Amino acid
 - RNA
 - Protein
- 15 The role of urea in PAGE separation of DNA is to _____.
- Helps to denature the DNA
 - Act as anion
 - Act as cation
 - Provide buffer stability of the gel
- 16 Which of the following will migrate faster?
- Nicked circular DNA
 - Single stranded DNA
 - Double stranded DNA
 - Super coiled circular DNA
- 17 Which of the following statements is true about migration of biomolecules?
- Rate of migration is directly proportional to current
 - The rate of migration is directly proportional to the resistance of medium
 - Low voltage is used for separation of high mass molecules
 - Rate of migration is inversely proportional to current
- 18 What does the electrophoresis apparatus consist of?
- Gel, buffer chamber and fire pack
 - Power pack and electrophoresis unit
 - Buffer chamber and electrophoresis unit
 - Electrophoresis unit and gel separator
- 19 Which of the following is not a characteristic of the immobilized enzymes?
- It produces reproducible results
 - They cannot be reused
 - Stability exists
 - Same catalytic activity is present for number of analysis

- 20 In Gas chromatography the mobile phase is
- (A) Gas
 - (B) Inert gas
 - (C) Gas and Liquid
 - (D) Liquid and inert gas
- 21 Which part of the light microscope controls the intensity of light entering the viewing area?
- (A) Coarse adjustment screw
 - (B) Fine adjustment screw
 - (C) Diaphragm
 - (D) Condenser lens
- 22 Which part of the compound microscope helps in gathering and focusing light rays on the specimen to be viewed?
- (A) Eyepiece lens
 - (B) Objective lens
 - (A) Condenser lens
 - (B) Magnifying lens
- 23 The polymerization of the gel used in PAGE occurs between polyacrylamide and _____
- (A) N, N – methylene bisacrylamide
 - (B) N, N – acrylamide
 - (C) Bisacrylamide
 - (D) N – methyleneacrylamide
- 24 Chromatography is a physical method that is used to separate and analyse _____
- (A) Simple mixtures
 - (B) Viscous mixtures
 - (C) Metals
 - (D) Complex mixtures
- 25 The prefix “nano” comes from a...
- (A) A French word
 - (B) A Greek word
 - (C) A Spanish word
 - (D) A Latin word
- 26 Who first used the term nanotechnology and when?
- (A) Richard Feynman, 1959
 - (B) Norio Taniguchi, 1974
 - (C) Eric Drexler, 1986
 - (D) Sumio Iijima, 1991
- 27 In which type of chromatography, the stationary phase is held in a narrow tube and the mobile phase is forced through it under pressure?
- (A) Planar chromatography
 - (B) Column chromatography
 - (C) Liquid chromatography
 - (D) Gas chromatography
- 28 In chromatography, the stationary phase can be _____ supported on a solid.
- (A) Liquid or gas
 - (B) Solid only
 - (C) Solid or liquid
 - (D) Liquid only
- 29 The first biosensor was invented in which year and by whom?
- (A) 1956, Leland Clark.
 - (B) 1962, Clark and Lyon.
 - (C) 1955, Leland Clark.
 - (D) 1957, Clark and Lyon.

- 30 Expand XRD.
- (A) X-ray.
 - (B) X-ray diffraction.
 - (C) X-ray diode.
 - (D) X-ray dot.
- 31 An example of Biosensor, “urea electrode” makes use of which of the following electrodes?
- (A) Carbon dioxide electrode
 - (B) Ammonium electrode
 - (C) Ammonia electrode
 - (D) Fluoride electrode
- 32 In glucose electrode, glucose oxidase has been coupled to an electrode by which of the following materials?
- (A) Urease
 - (B) Ferrocene derivatives
 - (C) Polyacrylamide
 - (D) Biochips
- 33 In light microscopy, which of the following is used as fixatives prior to staining technique?
- (A) Osmic acid
 - (B) Glutaraldehyde
 - (C) Heat
 - (D) Osmic acid, glutaraldehyde, heat
- 34 Total Magnification is obtained by _____
- (A) Magnifying power of the objective lens
 - (B) Magnifying power of eyepiece
 - (C) Magnifying power of condenser lens
 - (D) Magnifying power of both the objective lens and eyepiece
- 35 In Column chromatography, the stationary phase is made of _____ and the mobile phase is made of _____
- (A) Liquid, liquid
 - (B) Solid, liquid
 - (C) Liquid, gas
 - (D) Solid, gas
- 36 The tracking dye used in SDS-PAGE is _____.
- (A) Cationic
 - (B) Non-ionic
 - (C) Anionic
 - (D) Amphipathic
- 37 Beads of negative and positive charges used in ion exchange chromatography are of
- (A) Silica
 - (B) Alumina
 - (C) Cellulose
 - (D) All the above
- 38 Which of the following is used in electron microscope?
- (A) electron beams and magnetic fields
 - (B) electron beams
 - (A) magnetic fields
 - (B) light waves
- 39 Negative Staining is used for examining _____
- (A) virus particles
 - (B) virus particles, protein molecules and bacterial flagella
 - (C) protein molecules
 - (D) bacterial flagella

- 40 The cathode of transmission electron microscope consists of a _____
- (A) bulb
 - (B) iron filament
 - (C) gold wire
 - (D) tungsten wire
- 41 A pH value less than 7.0 means that the solution is:
- (A) Conductive
 - (B) Acidic
 - (C) Caustic
 - (D) Hot
- 42 The Nernst equation relates:
- (A) Reagent dosage to change in pH
 - (B) Relative ion concentration to voltage
 - (C) O₂ concentration to latent heat
 - (D) Conductivity to fluid flow rate
- 43 If a solution has to be a buffer, its pH should be
- (A) At its K_a value
 - (B) At 7
 - (C) At its pK_a value
 - (D) At 14
- 44 Normal pH of blood is
- (A) 7.0
 - (B) 7.4
 - (C) 7.2
 - (D) 7.3
- 45 The polarity of water molecule is due to
- (A) The readily ionizing behavior of water
 - (B) The positive charge of water molecule
 - (C) The negative charge of water molecule
 - (D) Difference in electro negativity of oxygen and hydrogen atoms in water
- 46 Which of these biosensors use the principle of heat released or absorbed by a reaction?
- (A) Potentiometric biosensor
 - (B) Optical biosensors
 - (C) Piezo-electric biosensors
 - (D) Calorimetric biosensors
- 47 Which of the following biosensors use the movement of electrons produced during redox reactions?
- (A) Potentiometric biosensors
 - (B) Piezo-electric biosensors
 - (C) Optical biosensors
 - (D) Amperometric biosensor
- 48 Electrophoresis was developed by:
- (A) Tiselius
 - (B) Tswett
 - (C) Tsvedberg
 - (D) Sanger
- 49 Buffers are mixtures of:
- (A) Weak acid and their conjugate base
 - (B) Strong acid and strong base
 - (C) Strong acid and weak base
 - (D) Weak base and their conjugate acid
- 50 The role of APS in SDS-PAGE is to_____.
- (A) Act as a catalyst in the polymerization of acrylamide
 - (B) Act as a bridge between acrylamide and bis-acrylamide
 - (C) Act as a source of free radicals
 - (D) Act as a pore builder in the polymerized gel

