



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनन्दपुरम् - ६९५ ०११, केरल, भारत

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY

THIRUVANANTHAPURAM – 695 011 KERALA, INDIA

(An Institute of National Importance under Govt. of India)

(भारत सरकार के अधीन एक राष्ट्रीय महत्व सस्थान)

Ph: 0471-2443152, FAX: 0471-2446433, 2550728

Email: sct@sctimst.ac.in Website – www.sctimst.ac.in

WRITTEN TEST

VOP -Scientific Assistant (Instruments)- Central Analytical Facility

Roll No.

Date: 19.05.2026

Time: 10.00 A.M

Duration: 60 Minutes

Total Marks: 50

INSTRUCTIONS TO THE CANDIDATE

1. Write your Roll Number on the top of the Question Booklet and in the answer sheet.
2. Write legibly the alphabet of the most appropriate answer in the separate answer sheet provided.
3. There will not be any Negative marking.
4. Over-writing is not permitted.
5. Candidate should sign in the question paper and answer sheet.
6. No clarifications will be given.
7. Candidate should hand over the answer sheet and question paper to the invigilator before leaving the examination hall.

Signature of the Candidate

1	Height Equivalent Theoretical Plates (HETP) is a qualification parameter used in			
	A	Mechanical testing	B	Chromatography
	C	Spectroscopy	D	Thermal analysis
2	Determination of viscosity of polymeric solutions using the can and spindle approach is based on.....			
	A	Hoeppler principle	B	Ostwald principle
	C	Searle principle	D	Ubbelohde principle
3	Surface tension of water at room temperature will be.....mN/m			
	A	18	B	45
	C	96	D	72
4	Wilhelmy plate used for the surface tension analysis is made of, due to its inertness, high wettability, and ease of cleaning.			
	A	Pt	B	Si
	C	Au	D	Cu
5 permeability cups are used for estimating the water vapour transmission rate of wound dressing materials as per ASTM E96.			
	A	Stanly	B	Parkes'
	C	Searl	D	Payne
6	ISO 10993-7 refers to the estimation of residual content ofin medical devices.			
	A	Ethylene oxide	B	Diethyl hexyl phthalate
	C	Solvents	D	Bis phenol A
7	RoHS compliance test is one of the inevitable tests for qualifying medical-grade plastics. RoHS stands for			
	A	Residual content of Oxygen Hydrogen and Sulphur	B	Restriction of Hazardous Substances
	C	Residue of Hazardous Solvents	D	Reduced Oxidants in Hemolytic Solution
8	The advancing contact angle of a polymer film measured by Wilhelmy approach using a force tensiometer by immersing in water yields a value of 120° in three subsequent cycles, it can be termed as.....			
	A	Hydrophobic	B	Hydrophilic
	C	Hydroponic	D	Hygroscopic
9	DTGS detector is commonly used in spectroscopic analyses. What is DTGS?			
	A	Digital thermocouple based galvanic sensor	B	Digital thermocouple incorporated gas sensor
	C	N,N-Dimethyl -N-thio guanidine sulfate	D	Deuterated Triglycine Sulfate
10	If the angle of reflection is equal to the angle of incidence, such reflections are called.....			
	A	Diffuse reflection	B	Total internal reflection
	C	Specular reflection	D	Angular reflection
11	The Mark-Houwink equation relates the molecular mass of a macromolecule with its			
	A	Oxidation Potential	B	Intrinsic viscosity
	C	Critical Micelle Concentration	D	Absorbance

12	Within the elastic limit, the stress is directly proportional to strain. This relation is called..... ?			
	A	Boyles' law	B	Bardeen law
	C	Hooke's law	D	Pauling law
13	Gold nanoparticles show brilliant colors ranging from purple to red due to			
	A	Interferromagnetism	B	Total internal reflection
	C	Crystal anisotropy	D	Surface Plasmon resonance
14	For Raman imaging, the clusters for mapping are selected based on the variation in			
	A	Surface roughness	B	Functional groups
	C	Optical diffraction	D	Surface conductivity
15	Chlorine gas will turn litmus paper into.....			
	A	Red	B	Blue
	C	Black	D	Colorless
16	If the CIE Lab color measurements of a sample gave a L value of 0, its color can be			
	A	Blue	B	Red
	C	Black	D	White
17	The Welch-Satterthwaite formula is used for the determination of.....			
	A	Intrinsic Viscosity of Solids	B	Effective degrees of freedom
	C	Optimal surface tension	D	Water vapor permeability
18	If the combined standard uncertainty of a measurement is 0.2 and the coverage factor is 2, the expanded uncertainty of the measurement will be.....			
	A	0.2	B	0.1
	C	2.2	D	0.4
19	A transition metal alloy loses its permanent magnetism around 650 °C and converts into a paramagnetic state. 650 is its.....			
	A	Curie point	B	Boyle point
	C	Joule point	D	Yield point
20	Your lab participated in an Inter-laboratory comparison program for residual ethylene oxide analysis and got a z-score of 1.25. Your results are.....			
	A	Non-satisfactory	B	Questionable
	C	Satisfactory	D	None of these
21	NABL accredited test reports often have an 18 digit ULR number in it. ULR stands for.....			
	A	Universal Laboratory Report	B	Unique Laboratory Report
	C	Unique Laboratory Record	D	Unified Laboratory Report
22	A mixture of two components with closely spaced absorption maxima of 335 nm and 336 nm, was submitted to your lab for quantitative chromatographic analysis. Which detector will you choose for their separation and quantification.....			
	A	UV detector	B	Diode array detector
	C	Tungsten lamp	D	Mass detector
23	For the regulatory documentation, you need to estimate the residual content of volatile hydrocarbon solvents in your medical device, suggest a suitable method for this analysis			
	A	GC	B	HPLC
	C	DSC	D	GPC

24	As per ISO 32, a cylinder with a shoulder colour of black is likely to contain...?			
	A	Argon	B	Nitrogen
	C	Oxygen	D	CO ₂
25	A PPE manufacturing company specifically requires isotactic polypropylene for its production. Suggest a method to distinguish the required polymer from polymers with other tacticities.			
	A	Raman	B	DSC
	C	TGA	D	GC
26	The TGA profile of calcium oxalate monohydrate hasStage degradator.			
	A	3	B	2
	C	4	D	Single
27 Standard is used for the determination of the heat capacity of materia s using Differential Scanning Calorimetry.			
	A	Alumina	B	KBr
	C	Sapphire	D	Polystyrene
28	Absolute molecular weight of a polymer can be estimated by using adetector for Gel permeation chromatography analysis.			
	A	Differential Refractive index	B	Multi angle light scattering
	C	Diode Array detector	D	Electrical conductivity
29	Mechanical testing of two needles displayed peak penetration forces of 1 N and 3N respectively. Which one will give comfortable injection.....			
	A	3N	B	Both
	C	1N	D	Can't say
30	ISO 10993-18 deals with the of medical devices for their toxicological risk assessment....			
	A	Chemical characterization	B	Physical, topographical and morphological characterization
	C	Heomocompatibility analysis	D	Sample preparation and reference materials
31	For the exhaustive extraction of a medical device as per ISO 10993-12 the extraction should be continued till the analyte response reduced less than... of initial response.			
	A	5%	B	20%
	C	10%	D	1%
32	As per ISO 17025: 2017, the laboratory should ensure the validity of their test results. Identify which of the following methods are suitable for this purpose. a) Inter-laboratory comparison, b) retesting, c) blind sample analysis, d) intermediate checks with standards, e) use of alternate instruments			
	A	a, b, c and e	B	b, c, d, and e
	C	None of these	D	All of these
33	While performing the Raman analysis of a sample, the analyst observed ε sharp substrate peak around 520 cm ⁻¹ . The substrate could be.....			
	A	Alumina	B	Silicon
	C	Steel	D	Glass
34	When a sample was excited at 270 nm, the emission spectrum gave a sharp peak around 540 nm. This could be due to.....			
	A	First-order phonon vibration	B	Band-band emission

Handwritten signature or mark.

	C	Defect state emission	D	Second-order Rayleigh scattering
35	Which of the following methods is/are suitable for estimating the residual content of plasticizer, di (2-ethylhexyl) phthalate (DEHP), in poly (vinyl chloride) (PVC) extract.			
	A	HPLC	B	LC-MS
	C	UV spectrophotometer	D	All of these
36	The replicate measurement of the absorbance of a sample solution gave the following values: 0.73, 0.71, 0.72, 0.725, 0.713, 0.716, 0.723, 0.718, and 0.715. What is the median value of the measurement?			
	A	0.72	B	0.718
	C	0.715	D	0.716
37	For the chromatographic estimation of a drug, you require a 1:1 mixture of acetonitrile and 0.1% formic acid as the mobile phase. How much volume of 98% formic acid will you take to prepare 500 ml of an approximate 0.1% formic acid solution?			
	A	98 μ l	B	598 μ l
	C	510 μ l	D	398 μ l
38	Suggest a suitable reagent among the following commonly used for the estimation of residual aldehyde content in medical device extract solutions.			
	A	2,4-Dinitrophenyl hydrazine	B	Rhodamine 6G
	C	Phthalic anhydride	D	O-phthalaldehyde
39	Ishikawa diagram for uncertainty assessment is also known as.....			
	A	Cause and effect diagram	B	Weibull diagram
	C	Uncertainty budget	D	Probability distribution
40	If a polymer film sample having a cross sectional area of 100 mm ² can withstand a maximum load of 7 N, what will be its tensile strength?			
	A	700 MPa	B	70 MPa
	C	0.7 MPa	D	0.07 MPa
41	FTIR spectrum of an amino acid gave a prominent peak of S-H stretching at 2550 cm ⁻¹ . The amino acid can be.....			
	A	Methionine	B	Cysteine
	C	Ornithine	D	Tryptophan
42	Debye-Scherer equation is used for the determination of			
	A	Conjugation length	B	Effective surface area
	C	Crystallite size	D	Radius of gyration
43	The glass transition temperature (T _g) of a polymer can be calculated using			
	A	Differential Scanning Calorimeter	B	Dynamic mechanical analyzer
	C	Thermo mechanical analyzer	D	All of these
44	FID is used as the common detector for analyzing mass flow of samples in gas chromatographic analysis. FID stands for.....			
	A	Fourier Integrated Detector	B	Free Induction Decay
	C	Flame Ionization Detector	D	Flow Induced Detector
45	A deuterium lamp is used in spectrophotometers to provide electromagnetic radiation in the range.....			
	A	200-800 nm	B	180-370 nm
	C	190-1100 nm	D	220-800 nm
46	In the FTIR spectrum of poly(acrylonitrile), the characteristic sharp peak observed around 2260 cm ⁻¹ is due tovibration			

Handwritten signature or mark.

	A	NH	B	CS
	C	CN	D	NO
47	Calciferol is the common chemical name of.....			
	A	Vitamin D	B	Vitamin K
	C	Vitamin E	D	Vitamin C
48	The humidity of a room in which the analysis is to be carried out can be measured using a			
	A	Hydrometer	B	Hygrometer
	C	Manometer	D	Barometer
49	The medical devices whose cumulative sum of single, multiple or repeated contact time is likely to exceed 24 h but not exceed 30 d are called.....			
	A	Limited exposure devices	B	Permanent exposure devices
	C	Prolonged exposure devices	D	Minimal invasive devices
50	For the analysis of a drug, a customer provided the standard reference material (SRM) of drug to the laboratory with traceable certificate which reads the concentration as 53.0 ± 3.4 mg/mL. Where 3.4 is the.....			
	A	Nominal value	B	Standard uncertainty
	C	Expanded uncertainty	D	Measured value

AP

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY
BIOMEDICAL TECHNOLOGY WING, POOJAPURA, TRIVANDRUM – 12
(An Institution of National Importance, Department of Science and Technology, Govt. of India)

VACANCY-ORIENTED PROMOTION SCHEME

Name of the Post	:	Scientific Assistant (Instruments)			
Date of examination	:	<i>19th May 2026</i>			
Duration of the exam	:	60 mins	Total marks	:	50

Answer key

Question No.	Answer	Question No.	Answer	Question No.	Answer
1	B	18	D	35	D
2	C	19	A	36	B
3	D	20	C	37	C
4	A	21	B	38	A
5	D	22	D	39	A
6	A	23	A	40	D
7	B	24	B	41	B
8	A	25	B	42	C
9	D	26	A	43	D
10	C	27	C	44	C
11	B	28	B	45	B
12	C	29	C	46	C
13	D	30	A	47	A
14	B	31	C	48	B
15	D	32	D	49	C
16	C	33	B	50	C
17	B	34	D		

