SET-"Y" (Total No. of printed pages : 20)

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE, November-2025

(PHARMACEUTICAL SCIENCES)

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Sr. No.



A		
Time: 1¼ Hours	Total Questions: 100	Max. Marks: 100
Roll No	(in figure)	(in words)
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Date of Examination:	-	

(Signature of the candidate)

(Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

All questions are compulsory.

The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.

Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by

the candidate.

Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.

The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers

MUST NOT be ticked in the Question book-let.

There will be negative marking and a deduction of 0.25 marks for each wrong answers. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.

Use only Black or Blue BALL POINT PEN of good quality in the OMR Answer-

Sheet.

BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.



Question	Code-A		
No.	Questions		
1.	Which of the following is not a characteristic of research?		
	(1) Systematic (2) Logical		
	(3) Biased (4) Empirical		
2.	Which of the following is not a type of parametric test?		
4	(1) Chi square test (2) ANOVA		
	(3) Correlation coefficient (4) t test		
3.	Quarantine for newly received animals is necessary to:		
	(1) Allow acclimatization and detect infections		
	(2) Reduce housing space		
	(3) Train the animals for experiments		
	(4) Minimize feed consumption		
4.	CCSEA recommends that animal housing rooms must be maintained		
	at:		
	(1) Any convenient temperature		
	(2) Temperature and humidity suitable for each species		
	(3) Low humidity and poor ventilation		
	(4) The same temperature for all animals		
5.	Which document preceded and influenced the Declaration of Helsinki?		
	(1) Belmont Report (2) Nuremberg Code		
	(3) CIOMS Guidelines (4) ICH-GCP Guidelines		
6.	The hypothesis which develops while planning the research is:		
,	(1) Working hypothesis (2) Research hypothesis		
	(3) Null hypothesis (4) Complex hypothesis		

No. 7. Pe (1) (2) (3) (4)	The strength of the correlation	ata for a on betw on betw ous inc	een the mean and median reen two numerical parameters rease or decrease, or inverse
(1)	The scattering strength of day The strength of the correlation The strength of the correlation The tendency of simultaneous evolution, for two numerical	ata for a on betw on betw ous inc	een the mean and median reen two numerical parameters rease or decrease, or inverse
(3)	The strength of the correlation The strength of the correlation The tendency of simultaneous evolution, for two numerical	on betwon betwous inc	reen the mean and median reen two numerical parameters rease or decrease, or inverse
	The tendency of simultane	ous inc	rease or decrease, or inverse
(4)	evolution, for two numerical	Soul and the	
		parame	eters
	mothesis is a .		
8. Hy	podiesis is a.		
(1)	Statement that can be tested	l (2)	Theory
(3)	Fact	(4)	Law
9. W	What is the full form of CCSEA?		
(1)	Committee for Control and S	upervis	ion of Experiments on Animals
(2)	Central Committee for Super	rvision	of Ethical Activities
(3)	(3) Council for Care and Safety of Experimental Animals		
(4)	(4) Committee for Certification of Scientific Animal Experiments		
10. A	A variable that can be manipulated by the researcher is:		
(1)	Dependent variable	(2)	Independent variable
(3)	Controlled variable	(4)	Extraneous variable
11. W	nich of the following is a probab	oility sa	ampling method?
(1)	Simple random sampling	(2)	Purposive sampling
(3)	Convenience sampling	(4)	Snowball sampling

Question	Code-A		
No.	Questions		
12.	A placebo is substance that :		
-	(1) Has active therapeutic effect		
	(2) Has no therapeutic effect and is used as a control		
	(3) Always cause adverse reactions		
	(4) Is used to increase drug absorption		
13.	What is full form of SPSS?		
	(1) Software Package for Sample Statistics		
	(2) Statistical Program for Social Services		
	(3) Systematic Processing for Statistical Studies		
	(4) Statistical Package for Social Sciences		
14.	Sampling is:		
	(1) Studying the entire population		
	(2) Studying a portion of the population		
	(3) Studying secondary data		
, contract	(4) None of the above		
15.	When $p < 0.05$, the finding is said to be:		
•	(1) Statistically significant (2) Clinically significant only		
	(3) Not significant (4) Randomly significant		
16.	The informed consent process must include:		
1	(1) Purpose, risks, benefits, right to withdraw, and confidentiality		
	details		
Polity i miss	(2) Only name and signature of participant		
pport macco	(3) Financial compensation alone		
-	(4) Medical history of investigator		

Question No.	Questions			
17.	Αn	ormal distribution curve is:	2 11 - CL - Mid	i og sattsfatididen og i
	(1)	Bell-shaped and symmetrical	(2)	Skewed to the right
	(3)	Skewed to the left	(4)	Rectangular
18.	Fro	m D is related to which of the fo	ollowi	ng:
	(1)	Record of Animals Acquired an	nd Ex	periments performed
	(2)	Record of Animals bred/acquir	ed	
Σ	(3)	Record of Animal sold		
	(4)	CCSEA nominee application for	orm	
19.	The	e test statistic used in ANOVA i	s:	
. 5	(1)	t-value	(2)	z-score
9	(3)	χ^2 value	(4)	F-ratio
20.	What is the use of Regression analysis?			
t.	(1)	Calculate measures of central	tende	ency
9	(2)	Determine the frequency of ob	serva	tions
-	(3) Understand the relationship between a dependent variable and			
	one or more independent variables			
	(4)	Detect outliers in a dataset		
21.	The principle of non-maleficence is best summarized as:			
	(1)	Act for the greatest good	(2)	Respect autonomy
	(3)	First, do no harm	(4)	Ensure justice
22.	What are the factors affecting sample size?			ze?
	(1)	Sampling design and statistics	al ana	llysis
	(2)	Level of precision and level of	confid	lence
	(3)	Degree of variability and non-	respo	nse rate
	(4)	All the above		
		745		

Question	Code-A
No.	Questions
23.	The 3Rs principle advocated by CCSEA stands for:
	(1) Replacement, Reduction, and Refinement
	(2) Reuse, Regulation, and Reproduction
• .	(3) Randomization, Reliability, and Replication
	(4) Replacement, Reporting, and Recording
24.	The main difference between parametric and non-parametric tests is
	that:
	(1) Non-parametric tests are always more powerful
	(2) Parametric tests can be used with any type of data
	(3) Parametric tests make assumptions about population parameters;
	non-parametric tests do not
	(4) Non-parametric tests require normal distribution
25.	Which of the following is incorrect?
,	(1) Low p-value indicates that results are statistically significant.
	(2) High p-value indicates results are not statistically significant.
	(3) ANOVA assumes null hypothesis is true.
	(4) None of the above
26.	What are the three major principles laid down by The Belmont Report
	(1979)?
,	(1) Randomization, reproducibility, and reliability
	(2) Respect for persons, beneficence, and justice
	(3) Confidentiality, analysis, and documentation
	(4) Control, intervention, and random sampling

Question No.	Questions		
27.	A researcher divides the population into several groups based on		
	geographical regions and then randomly selects a few groups for study.		
	This is an example of a:		
	(1) Simple random sample (2) Systematic sample		
	(3) Cluster sample (4) Stratified sample		
28.	The principle of beneficence requires the researcher to:		
	(1) Publish all results immediately		
	(2) Maintain blinding during trials		
	(3) Maximize possible benefits and minimize potential harm		
	(4) Avoid informed consent		
29.	According to CCSEA, selection of euthanasia method depends on:		
	(1) Researcher's convenience		
•	(2) Animal species, size, age, and purpose of euthanasia		
,	(3) Institutional budget		
•	(4) Type of publication		
30.	According to ICMR, all clinical drug trials in India must be registered		
	with:		
;	(1) World Health Organization		
	(2) Food and Drug Administration		
- 2	(3) Clinical Trials Registry-India		
	(4) Central Bureau of Health Research		
31.	According to Good clinical Practice (GCP), the investigator must report		
	any serious adverse event (SAE) to the Ethics committee within:		
	(1) 7 days (2) 15 days		
	(3) 24 hours (4) 1 month		
	One of a part of the property		

(6)

SET_Y Code—A

Question	Questions Code—A
No. 32.	ANOVA is used to compare:
	Company of two groups
	(2) The means of three or more groups
	(3) The variances of two groups only
- Santakan J	(4) Proportions in categorical data
33.	The Declaration of Helsinki was developed by which organization?
	(1) World Health Organization
	(2) United Nations
9	(3) World Medical Association
	(4) International Council for harmonization
34.	Indentify the option that is not a characteristic of qualitative research.
	(1) Thematic analysis (2) Case study
	(3) Discourse analysis (4) Survey method
35.	The Nuremberg Code (1947) was developed after:
	(1) World War II unethical human experiments
	(2) The Tuskegee Syphilis Study
	(3) The Thalidomide tragedy
	(4) World Health Organization's founding
36.	Medical ethics is primarily based on :
	(1) Economic considerations
	(2) Professional competition
2002	(3) Human dignity, rights, and moral duty
	(4) Institutional politics

Question No.	Questions
37.	Which of the following is not a type of research design?
	(1) Exploratory (2) Descriptive
San Carlo	(3) Experimental (4) Accidental
38.	Euthanasia involves:
	(1) Intentionally ending life to relieve suffering
	(2) Providing emotional support to the terminally ill
	(3) Withholding data publication
Service Control	(4) Ensuring autonomy
39.	Which of the following conditions is not suitable for proper animal
ia .	housing in a research facility?
	(1) Provide an escape-proof enclosure that ensures the animal's
	safety.
	(2) Provide easy access to food and water.
	(3) Maintain poor ventilation to minimize air circulation and noise.
, and the second	(4) Keep the animal dry and clean, consistent with species
	requirements.
40.	According to the Declaration of Helsinki, who is responsible for
	protecting the life, health, dignity, integrity, and privacy of research
	subjects?
Aug.	(1) The sponsor
	(2) The ethics committee
	(3) The physician or health professional conducting the research
	(4) The government authority

(8)

Question No.	Questions
41.	Euthanasia should be adopted in which of the following conditions:
-	(1) When the animal is paralyzed and is not able to perform its
-	natural functions or it becomes incapable of independent
	locomotion or it can no longer perceive the environment in an
	intelligible manner
	(2) If during the course of experimental procedure the animal has
	been left with a recurring pain where in the animal exhibits
	obvious signs of pain and suffering
	(3) Where the non-termination of the life of the experimental animal
	will be life threatening to human beings or other animals
	(4) All the above
42.	Inhalant agents such as carbon dioxide (CO2) are used for euthanasia
	because they:
,	(1) Induce pain before death
	(2) Require physical restraint for long duration
3	(3) Cause rapid loss of consciousness with minimal distress
99	(4) Are ineffective in small rodents
43.	The CCSEA functions under which Ministry?
	(1) Ministry of Health and Family Welfare
er.	(2) Ministry of Science and Technology
	(3) Ministry of Environment, forest and Climate Change
• • •	(4) Indian Council of Medical Research

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Questic No.			
44.	The Declaration of Helsinki was developed as a statement of ethical		
	principles for:		
· ·	(1) Research on animal only		
, -	(2) Medical research involving human subjects, including identifiable		
	human material and data		
	(3) Epidemiological research only		
	(4) Social science research involving interviews		
45.	Which of the following statements about the literature review is		
	wrong?		
	(1) It helps identify gaps in existing research.		
	(2) It provides a theoretical foundation for the current study.		
	(3) It eliminates the need to collect primary data.		
	(4) It helps refine research questions and hypotheses.		
46.	In a normal distribution, mean, median, and mode are:		
	(1) Equal (2) Unequal		
	(3) Random (4) Independent		
47.	Which of the following best describes a conflict of interest in medical		
	research?		
	(1) When a researcher's personal or financial interests may influence		
	study outcomes		
	(2) When a study is delayed due to lack of funding		
	(3) When participants withdraw from a study		
(A)	(4) When ethical approval takes longer than expected		
48.	The Declaration of Helsinki was first adopted in :		
	(1) 1947 (2) 1964		
Control Control	(3) 1975 (4) 1989		

Question	Overtical Code—A			
No.	Questions			
49.	In a single-blind study, the person unaware of treatment allocation is:			
	(1) Only the subject			
1	(2) Only the investigator			
	(3) Both subject and investigator			
	(4) The ethics committee			
50.	Identify the preferred sampling for the population with finite size			
,	among the following:			
	(1) Systematic sampling (2) Purposive sampling			
· ,	(3) Cluster sampling (4) Area sampling			
51.	Which law relates the absorbance with concentration and path length?			
	(1) Newton's Law (2) Beer-Lambert's Law			
	(3) Ohm's Law (4) Dalton's Law			
52.	UV-Visible spectroscopy measures the:			
r , 3	(1) Absorption of infrared light			
	(2) Emission of UV light			
and the state of t	(3) Absorption of UV or visible light			
No.	(4) Reflection of UV light			
53.	In IR spectroscopy, absorption is due to:			
	(1) Electronic transitions (2) Vibration transitions			
	(3) Rotational transitions (4) Nuclear transitions			
54.	Coupling constant (J) value:			
-	(1) Depends upon magnetic field			
	(2) Is independent of magnetic field			
	(3) Depends on reference standard used			
	(4) Depends on solvent used			
-				

Question	Questions			
Na	When absorption intensity of compound is decreased, the phenomenon			
55.				
	is k	tnown as:	(2)	Hypochromic shift
	(1)	Hyperchromic shift	(2)	None
	(3)	Bathochromic Shift	(4)	Secretary and appropriate the secretary
56.	In a	aldehyde, the C=O stretch	ing vibrat10	n appears approximately at:
	(1)	1725cm ⁻¹	(2)	1660cm ⁻¹
	(3)	2750cm ⁻¹	(4)	3300cm ⁻¹
57.	Wh	ich of the following has hi	ghest chem	ical shift value?
	(1)	$\mathrm{CH_{3}I}$	(2)	$ m CH_3Br$
	(3)	$\mathrm{CH_3F}$	(4)	CH ₃ Cl
58.	In 1	mass spectrometry 81Br co	ntaining cor	mpounds show :
3	(1)	M+1 Peak	(2)	M+2 Peak
	(3)	M+3 Peak	(4)	M+4 Peak
59.	All	solvents are used to recor	d NMR spec	ctra except :
, ,	(1)	DMSO	(2)	$CDCl_3$
	(3)	C_2H_5OH	(4)	Deuterated benzene
60.	Rev	verse phase HPLC uses :	ethoraps :	
	(1)	Non polar solvent/polar	column	
	(2)	Polar solvent/polar colum	an	
e e e	(3)	Polar solvent/Non polar	column	
	(4)	All		
61.	An	unequal distribution of co	lor on the s	urface of tablet is called :
,	(1)	Cracking	(2)	Mottling
	(3)	Picking	(4)	_
	100-30-1		(=)	Chipping

Question No.	Que	stion	s COUC A
62.	Which of the following is pH sensitive bioerodible polymer:		
	(1) Polymethacrylate	(2)	HPMC
	(3) NaCMC	(4)	None
63.	Magnesium stearate is used as:	16. 7 3	. tabe
	(1) Antioxidant	(2)	Antiadherent
	(3) Binder	(4)	Film Coating
64.	The most important water-mi	scible	vehicle used in parenteral
	formulations is:		
	(1) Ethyl alcohol	(2)	Propylene glycol
	(3) Liquid polyethylene glycol	(4)	All of the above
65.	Carr's Index is related to :		
	(1) Flow property	(2)	Solubility
	(3) Partition coefficient	(4)	All of the above
66.	From the dissolution point of view	, whic	h of the following dosage forms
4	is least absorbed?		
	(1) Coated tablets	(2)	Solution
	(3) Suspension	(4)	Uncoated tablets
67.	What term describes the sepa	aration	n of solid particles from a
_	suspension over time, leading to t	he set	tling of particles at the bottom
	of the container?		
ja.	(1) Emulsification	(2)	Sedimentation
	(3) Precipitation	(4)	Dissolution
68.	Which of the following is most stab	ole for	m?
	(1) Powder	(2)	Syrup
	(3) Gel	(4)	Suspensions

Overtion	Questions			
Question No.	High speed homogenization ar	nd atomiza	ation of feed into a stream o	
69.		iu us		
	hot air is associated with:			
	(1) Spray Drying			
	(2) Centrifugal extrusion			
	(3) Spray congealing			
	(4) Multiorifice centrifugal tec	hnique		
70.	Photodegradation of a drug car	be preve	nted by:	
	(1) Refrigerating the product.			
	(2) Using an in-line filter during administration.			
	(3) Dispensing the drug in an amber-colored or opaque container.			
	(4) Adjusting the pH of the so	lution.		
71.	What is the bond angle in sp hybridization?			
	(1) 109.5°	(2)	120°	
	(3) 180°	(4)	119.5°	
72.	LiA1H ₄ is not used in reduction of:			
	(1) Alkene double bond	(2)	Carbonyl Carbon	
	(3) Amide	(4)	Ester	
73.	COMSIA is associated with:			
	(1) Virtual Screening	(2)	Molecular Docking	
	(3) QSAR	(4)	ADME Production	
74.	Stereoisomer of cyclic carbohy	drate is k	1 rediction	
	(1) Epimer	(2)	Anomer	
. (2)	(3) Enantiomer	(4)		
		(-)	$\operatorname{Diastereomer}$	

PHD-EE- November, 2025 (Pharmaceutical Sciences) Code-A

	and the second		Code-A
Questions			
Biphenyl show following kind of isomerism:			
(1) Optica	l isomer	(2)	Configurational isomer
(3) Atropis	somers	(4)	R and S isomer
Clavulanic	acid has beta-l	actam ring fus	ed with:
(1) Thieny	l system	(2)	Thiadiazole
(3) Thiazo	lidone	(4)	Oxazolidine
Which of th	e following is n	ot a synthetic	drug?
(1) Isoniaz	id	(2)	Rifampin
(3) Pyrazii	namide	(4)	Ethionamide
What is mo	st logical and n	olecular appr	each to drug discovery?
(1) Synthe	tic organic che	mistry	
(2) Structi	ire Based Drug	Design	
(3) QSAR			
(4) All			
At which po	sition penicilli	n has carboxyl	ic acid group :
(1) C-3		(2)	C-2
(3) C-6		(4)	C-7
Ethosuximi	de belongs to fo	ollowing chemi	cal class of anticonvulsant :
(1) Hydant	coin	(2)	Barbiturate
(3) Succina	ımide	(4)	Oxazolidinedione
A drug havi	ng high affinity	but low intri	nsic activity is called :
(1) Partial	agonist		
(2) Antagor	nist		
(3) Non-cor	npetitive anata	agonism	
(4) Compet	itive antagonis	s m	
	(1) Optical (3) Atropis Clavulanic (1) Thieny (3) Thiazo Which of the (1) Isoniaz (3) Pyrazin What is mod (1) Synthe (2) Structu (3) QSAR (4) All At which pod (1) C-3 (3) C-6 Ethosuximic (1) Hydant (3) Succinal A drug havid (1) Partial (2) Antagor (3) Non-con	(1) Optical isomer (3) Atropisomers Clavulanic acid has beta-lated (1) Thienyl system (3) Thiazolidone Which of the following is not followin	(1) Optical isomer (2) (3) Atropisomers (4) Clavulanic acid has beta-lactam ring fus (1) Thienyl system (2) (3) Thiazolidone (4) Which of the following is not a synthetic (1) Isoniazid (2) (3) Pyrazinamide (4) What is most logical and molecular approx (1) Synthetic organic chemistry (2) Structure Based Drug Design (3) QSAR (4) All At which position penicillin has carboxyl (1) C-3 (2) (3) C-6 (4) Ethosuximide belongs to following chemical (1) Hydantoin (2) (3) Succinamide (4) A drug having high affinity but low intrication (1) Partial agonist (2) Antagonist (3) Non-competitive anatagonism

Question	Questions					
No. 82.	A high degree of protein binding generally makes a drug long-acting					
	because:					
	(1) The bond fraction is rapidly me	1) The bond fraction is rapidly metabolized and excreted				
	(2) The bond fraction is not availal	ole for metabolism or excretion				
	(3) Protein binding increases the r	ate of drug elimination				
	(4) Protein-bound drugs cannot cro	oss biological membranes				
83.	Neurotransmission refers to:	Section (il to a la company on the later of				
	(1) Transfer of nerve impulses three	ough chemical messengers				
	(2) Electrical conduction through b	Electrical conduction through bone				
	(3) Secretion of hormones by gland	Secretion of hormones by glands				
	(4) Storage of neurotransmitters in	n muscles				
84.	Pilocarpine is classified as :					
	(1) Cholinesterase inhibitor	(2) Sympathomimetic				
	(3) Cholinomimetic	(4) Cholinolytics				
85.	Glutamate is primarily involved in					
	(1) Inhibitory transmission	(2) Excitatory transmission				
	(3) Hormonal signaling	(4) Protein synthesis				
86.	The primary mechanism by which r	The primary mechanism by which reserpine depletes monoamines is:				
,	(1) Inhibition of monoamine oxida	Inhibition of monoamine oxidase				
× .	(2) Blockade of vesicular monoami					
	(3) Inhibition of catechol-O-methy	Inhibition of catechol-O-methyltransferase				
	(4) Blocking dopamine receptors	and and				

Question	Code-A
No.	Questions
87.	Which pharmacological agent would increase acetylcholine levels at
	synapses by inhibiting its breakdown?
	(1) Neostigmine (acetylcholinesterase inhibitor)
	(2) Propranolol (beta-blocker)
	(3) Fluoxetine (SSRI)
	(4) Reserpine (vesicular monoamine transporter inhibitor)
88.	Which class of drugs increases synaptic dopamine by blocking the
	dopamine transporter?
	(1) SSRIs (2) DAT inhibitors (e.g., cocaine)
	(3) MAO inhibitors (4) COMT inhibitors
89.	Cell viability assays are used to assess:
	(1) DNA sequence
	(2) Enzyme kinetics
	(3) Cell survival and cytotoxicity
	(4) Drug solubility
90.	What happens when a high dose of acetylcholine (ACh) is administered
, .	after atropine?
:	(1) Bradycardia and fall in blood pressure due to parasympathetic
	stimulation
2.	(2) Tachycardia and rise in blood pressure due to stimulation of
	sympathetic ganglia and catecholamine release
· ,;	(3) No cardiovascular effect due to complete muscarinic blockade
	(4) Fall in blood pressure due to inhibition of sympathetic ganglia

Question No.		Questions		
91.	Intentional adulteration with the purpose of defrauding is termed:			e of defrauding is termed:
440	(1)	Substitution	(2)	Sophistication
	(3)	Deterioration	(4)	Spoilage
92.	The	Si-OH groups on silica ar	e also know	n as:
	(1)	Carboxyl groups	(2)	Hydroxyl groups
- - - -	(3)	Phenolic groups	(4)	Carbonyl groups
93.	Swe	lling index is determined	for :	
	(1)	Isphagula	(2)	Digitalis
	(3)	Clove	(4)	Aloes
94.	Whi	ch of the following crud	e drug is i	not used in the treatment of
	hyp	ertension?		
	(1)	Digitalis	(2)	Rauwolfia
*	(3)	Squill	(4)	Stropanthus
95.	Rete	ention time in HPLC or Go	C mainly de	pends on :
-	(1)	The detector sensitivity o	only	
	(2)	The interaction of analy	te with the	stationary phase and mobile
		phase composition		
	(3)	The color of the analyte		
	(4)	The sample injection volu	ıme only	
96.	"Lik	e with like" is the princip	le of :	• 4.
	(1)	Homeopathy	(2)	Ayurveda
	(3)	Unani	(4)	Siddha

Question	Code-A				
No.	Questions				
97.	Eugenol is the plant constituent of:				
	(1) Amla	(2)	Hibiscus		
	(3) Senna	(4)	Clove		
98.	Match the following natural drugs	with	their therapeutic uses :		
*	Drug	2	rapeutic uses		
	a. Liquorice	1.	CNS stimulant		
	b. Senna	2.	Expectorant		
	c. Nux vomica	3.	Laxative		
	d. Digitalis	4.	Cardiotonic		
	(1) a-1, b-2, c-3, d-4				
	(2) a-3, b-4, c-2, d-1				
	(3) a-4, b-1, c-3, d-2				
	(4) a-2, b-3, c-1, d-4				
99.	Total Ash value in the case of crud	e drug	g signifies :		
	(1) Organic content of the drug				
	(2) Cellular content of the drug				
	(3) Inorganic content of the drug				
	(4) Phytoconstituents of the drug				
100.	Organoleptic evaluation is an exar	nple o	f which type of study?		
	(1) Microscopic	(2)	Biological		
	(3) Technical	(4)	Morphological		
The state of the s	The second secon				

SET-"Y" (Total No. of printed pages : 20)

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE, November-2025 (PHARMACEUTICAL SCIENCES)



Time: 1¼ Hours	Total Quest	ions : 100	Max. Marks: 100
Roll No	(in figure)		(in words)
Name:			
Father's Name:	-	Mother's Name:	
Date of Examination:			
(Signature of the candi	idate)	(Signatu	re of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

All questions are compulsory.

The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.

Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by

the candidate.

Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.

The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers

MUST NOT be ticked in the Question book-let.

There will be negative marking and a deduction of 0.25 marks for each wrong answers. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.

Use only Black or Blue BALL POINT PEN of good quality in the OMR Answer-7.

Sheet.

BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION



Question No.			SET-Y			
1.	What is the b	uestions	Code-B			
	What is the bond angle in sp hybridization?					
	(3) 180°	(2)	1200			
2.		(4)	119.50			
1	LiA1H ₄ is not used in reduction (1) Alkene deall in	of:				
	che double bond	(2)	Carbonyla			
3.		(4)	Carbonyl Carbon Ester			
	COMSIA is associated with:	- '	25001			
	(1) Virtual Screening	(2)	M			
	(3) QSAR	an in the second	Molecular Docking			
4.	Stereoisomer of cyclic carbohyd (1) Epimer	(4)	ADME Prediction			
	(1) Epimer	rate is kr	nown as:			
	(3) Enantiomer	(2)	A_{nomer}			
5.		(4)	Diastereomer			
	Biphenyl show following kind of	f isomeri	sm:			
	(1) Optical isomer	(2)	Configurational isomer			
C	(3) Atropisomers	(4)	D 1 ~			
6. ,	Claveranic acid has beta-lactam ring fused with.					
	(1) Thienyl system	(2)	Thiadiazole			
	(3) Thiazolidone	(4)	Overolidina			
7.	Which of the following is not a	synthetic	drug?			
	(1) Isoniazid	(2)	Rifampin			
	(3) Pyrazinamide	(4)	Ethionamide			
8.	What is most logical and molec	ulon onn	Ethionamide			
	(1) Synthetic organic chemistr	uiar appi	roach to drug discovery?			
	(2) Structure Based Drug Des	- T-				
	(3) QSAR	ugn				
	(4) All					

Question No.	Questions Code-B			
9.	At v	which position penicillin has ca	arboxyl	ic acid group :
	(1)	C-3	(2)	C-2
	(3)	C-6	(4)	C-7
10.	Eth	osuximide belongs to following	chemi	ical class of anticonvulsant :
- 1	(1)	Hydantoin	(2)	Barbiturate
19	(3)	Succinamide	(4)	Oxazolidinedione
11.	Wh	ich law relates the absorbance	with c	oncentration and path length?
	(1)	Newton's Law	(2)	Beer-Lambert's Law
	(3)	Ohm's Law	(4)	Dalton's Law
12.	UV	-Visible spectroscopy measures	the:	N. Carlotte and Ca
	(1)	Absorption of infrared light		
	(2)	Emission of UV light		
	(3)	Absorption of UV or visible li	ght	₩
	(4)	Reflection of UV light		11 € 32 11 11 11 11 11 11 11 11 11 11 11 11 11
13.	In IR spectroscopy, absorption is due to:			
	(1)	Electronic transitions	(2)	Vibration transitions
	(3)	Rotational transitions	(4)	Nuclear transitions
14.	Cou	ipling constant (J) value :		
	(1)	Depends upon magnetic field		
- 1	(2)	Is independent of magnetic fi	eld	
	(3)	Depends on reference standa	rd used	d
	(4)	Depends on solvent used		
15.	Wh	en absorption intensity of com	pound	is decreased, the phenomenor
8	is k	nown as:		, ,
	(1)	Hyperchromic shift	(2)	Hypochromic shift
u = =	(3)	Bathochromic Shift	(4)	None

Question No.						
16.	In aldehyde, the C=O stretching vibration appears approximately at:					
	(1)	1725cm ⁻¹	(2)	1660cm ⁻¹		
	(3)	2750cm ⁻¹	(4)	3300cm ⁻¹		
17.	Wh	ich of the following has highe	st chem	ical shift value?		
in the second	(1)	$ m CH_3I$	(2)	$ m CH_3Br$		
	(3)	$\mathrm{CH_3F}$	(4)	CH ₃ Cl		
18.	In r	nass spectrometry ⁸¹ Br conta	ining co	mpounds show :		
	(1)	M+1 Peak	(2)	M+2 Peak		
v.	(3)	M+3 Peak	(4)	M+4 Peak		
19.	All	solvents are used to record N	MR spe	ctra except :		
19	(1)	DMSO	(2)	$CDCl_3$		
- 0	(3)	C_2H_5OH	(4)	Deuterated benzene		
20.	Rev	erse phase HPLC uses :		4		
	(1) Non polar solvent/polar column					
	(2)	Polar solvent/polar column				
	(3)	Polar solvent/Non polar colu	ımn			
8	(4)	All				
21.	Acc	ording to Good clinical Pract	ice (GCI	P), the investigator must repor		
7	any	serious adverse event (SAE)	to the E	Ethics committee within:		
*	(1)	7 days	(2)	15 days		
	(3)	24 hours	(4)	1 month		
22.	ANG	OVA is used to compare :	14			
	(1)	The medians of two groups				
	(2) The means of three or more groups					
	(3)	The variances of two groups	only	¥		
	(4)	Proportions in categorical d				

Code-B					
Questions					
The Declaration of Helsinki was developed by which organization?					
(1) World Health Organization					
(2) United Nations					
(3) World Medical Association					
(4) International Council for harmonization					
Indentify the option that is not a characteristic of qualitative research.					
(1) Thematic analysis (2) Case study					
(3) Discourse analysis (4) Survey method					
The Nuremberg Code (1947) was developed after:					
(1) World War II unethical human experiments					
(2) The Tuskegee Syphilis Study					
(3) The Thalidomide tragedy					
(4) World Health Organization's founding					
Medical ethics is primarily based on :					
(1) Economic considerations					
(2) Professional competition					
(3) Human dignity, rights, and moral duty					
(4) Institutional politics					
Which of the following is not a type of research design?					
(1) Exploratory (2) Descriptive					
(3) Experimental (4) Accidental					
Euthanasia involves:					
(1) Intentionally ending life to relieve suffering					
(2) Providing emotional support to the terminally ill					
(3) Withholding data publication					
(4) Ensuring autonomy					

Question No.	Questions					
29.	Which of the following conditions is not suitable for proper animal					
	housing in a research facility?					
	(1) Provide an escape-proof enclosure that ensures the animal's					
K.*	safety.					
2	(2) Provide easy access to food and water.					
•	(3) Maintain poor ventilation to minimize air circulation and noise.					
	(4) Keep the animal dry and clean, consistent with species					
6	requirements.					
30.	According to the Declaration of Helsinki, who is responsible for					
	protecting the life, health, dignity, integrity, and privacy of research					
	subjects?					
	(1) The sponsor					
	(2) The ethics committee					
	(3) The physician or health professional conducting the research					
	(4) The government authority					
31.	Which of the following is a probability sampling method?					
	(1) Simple random sampling (2) Purposive sampling					
	(3) Convenience sampling (4) Snowball sampling					
32.	A placebo is substance that:					
	(1) Has active therapeutic effect					
	(2) Has no therapeutic effect and is used as a control					
	(3) Always cause adverse reactions					
B	(4) Is used to increase drug absorption					

Overtica	Code-B
Question No.	Questions
33.	What is full form of SPSS?
	(1) Software Package for Sample Statistics
	(2) Statistical Program for Social Services
	(3) Systematic Processing for Statistical Studies
4	(4) Statistical Package for Social Sciences
34.	Sampling is:
	(1) Studying the entire population
	(2) Studying a portion of the population
	(3) Studying secondary data
	(4) None of the above
35.	When p < 0.05, the finding is said to be:
	(1) Statistically significant (2) Clinically significant only
	(3) Not significant (4) Randomly significant
36.	The informed consent process must include:
	(1) Purpose, risks, benefits, right to withdraw, and confidentiality
	details
	(2) Only name and signature of participant
	(3) Financial compensation alone
	(4) Medical history of investigator
37.	A normal distribution curve is:
	(1) Bell-shaped and symmetrical (2) Skewed to the right
	(3) Skewed to the left (4) Rectangular

Question No.		Questions					
38.	D: lated to which of the following:						
	(1) Record of Animals Acquired and Experiments performed						
=	(2)	(2) Record of Animals bred/acquired					
·	(3)	Record of Animal sold					
	(4)	CCSEA nominee applicat	ion form				
39.	The	e test statistic used in ANC	VA is:				
	(1)	t-value	(2)	z-score			
	(3)	χ^2 value	(4)	F-ratio			
40.	What is the use of Regression analysis?						
	(1)	(1) Calculate measures of central tendency					
	(2) Determine the frequency of observations						
	(3) Understand the relationship between a dependent variable and						
		one or more independent	variables				
	(4) Detect outliers in a dataset						
41.	Inte	entional adulteration with	the purpos	se of defrauding is termed:			
	(1)	Substitution	(2)	Sophistication			
	(3)	Deterioration	(4)	Spoilage			
42.	The Si-OH groups on silica are also known as :						
	(1)	Carboxyl groups	(2)	Hydroxyl groups			
	(3)	Phenolic groups	(4)	Carbonyl groups			
	(0)						
43.	2.0	elling index is determined	for :				
43.	2.0	elling index is determined Isphagula	for: (2)	Digitalis			

Question No.			Questions	A CONTRACTOR OF THE CONTRACTOR		
44.	Which of th	he following cruc	le drug is r	not used in the treatment	of	
	hypertensio		*			
	(1) Digital	is	(2)	Rauwolfia		
	(3) Squill		(4)	Stropanthus		
45.	Retention ti	ime in HPLC or G	C mainly de	epends on :		
	(1) The detector sensitivity only					
	(2) The in	teraction of analy	te with the	stationary phase and mo	bil	
		composition	÷			
	(3) The col	lor of the analyte				
	(4) The same	mple injection vol	ume only			
46.	"Like with like" is the principle of:					
	(1) Homeo	pathy	(2)	Ayurveda		
	(3) Unani		(4)	Siddha		
47.	Eugenol is the plant constituent of:					
	(1) Amla		(2)	Hibiscus		
	(3) Senna		(4)	Clove		
48.	Match the f	following natural	drugs with t	heir therapeutic uses :		
	Drug		Ther	apeutic uses		
	a. Liquor	rice	1.	CNS stimulant		
	b. Senna		2.	Expectorant		
*	c. Nux vo	omica	3.	Laxative		
	d. Digital	lis	4.	Cardiotonic		
	(1) a-1, b-2	2, c-3, d-4				
	(2) a-3, b-4	4, c-2, d-1				
		1, c-3, d-2				
	127 H 1274	3, c-1, d-4				

49. Total Ash value in the case of crude drug signifies: (1) Organic content of the drug (2) Cellular content of the drug (3) Inorganic content of the drug (4) Phytoconstituents of the drug 50. Organoleptic evaluation is an example of which type of study? (1) Microscopic (2) Biological (3) Technical (4) Morphological 51. An unequal distribution of color on the surface of tablet is calle (1) Cracking (2) Mottling (3) Picking (4) Chipping 52. Which of the following is pH sensitive bioerodible polymer: (1) Polymethacrylate (2) HPMC (3) NaCMC (4) None 53. Magnesium stearate is used as: (1) Antioxidant (2) Antiadherent (3) Binder (4) Film Coating 54. The most important water-miscible vehicle used in particulations is: (1) Ethyl alcohol (2) Propylene glycol (3) Liquid polyethylene glycol (4) All of the above 55. Carr's Index is related to: (1) Flow property (2) Solubility	14 2000	nestion No.	Questions	
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(1) How property	ndex is r	55. Car	Index is related to :	
	w proper	(1)	ow property (2) Solubility	
(3) Partition coefficient (4) All of the above	tition co	(3)	artition coefficient (4) All of the above	

Question	Code
No.	Questions
56.	From the dissolution point of view, which of the following dosage form
	is least absorbed?
	(1) Coated tablets (2) Solution
	(3) Suspension (4) Uncoated tablets
57.	What term describes the separation of solid particles from
	suspension over time, leading to the settling of particles at the botto
	of the container?
(A)	(1) Emulsification (2) Sedimentation
	(3) Precipitation (4) Dissolution
58.	Which of the following is most stable form?
	(1) Powder (2) Syrup
	(3) Gel (4) Suspensions
59.	High speed homogenization and atomization of feed into a stream
	hot air is associated with:
	(1) Spray Drying
	(2) Centrifugal extrusion
	(3) Spray congealing
	(4) Multiorifice centrifugal technique
60.	Photodegradation of a drug can be prevented by:
	(1) Refrigerating the product.
	(2) Using an in-line filter during administration.
ar ar	(3) Dispensing the drug in an amber-colored or opaque container. (4) Adjusting the pH of the solve:
	(4) Adjusting the pH of the solution.

Question	Questions					
No. 61.	drug having high affinity but low intrinsic activity is called:					
01.						
	(1) Partial agonist					
	(2) Antagonist					
8	(3) Non-competitive anatagonism					
	(4) Competitive antagonism					
62.	A high degree of protein binding generally makes a drug long-acting					
	because:					
	(1) The bond fraction is rapidly metabolized and excreted					
	(2) The bond fraction is not available for metabolism or excretion					
	(3) Protein binding increases the rate of drug elimination					
	(4) Protein-bound drugs cannot cross biological membranes					
63.	urotransmission refers to :					
	(1) Transfer of nerve impulses through chemical messengers					
20	(2) Electrical conduction through bone					
	(3) Secretion of hormones by glands					
	(4) Storage of neurotransmitters in muscles					
64.	Pilocarpine is classified as:					
	(1) Cholinesterase inhibitor (2) Sympathomimetic					
	(3) Cholinomimetic (4) Cholinolytics					
65.	Glutamate is primarily involved in:					
0 T 0 T 0 T 0 T 0 T 0 T 0 T 0 T 0 T 0 T	(1) Inhibitory transmission (2) Excitatory transmission					
	(3) Hormonal signaling (4) Protein synthesis					

Question	Questions				
No. 66.	The primary mechanism by which reserpine depletes monoamines is:				
	(1) Inhibition of monoamine oxidase				
·	(2) Blockade of vesicular monoamine transporter (VMAT)				
	(3) Inhibition of catechol-O-methyltransferase				
	(4) Blocking dopamine receptors				
67.	Which pharmacological agent would increase acetylcholine levels a				
•	synapses by inhibiting its breakdown?				
	(1) Neostigmine (acetylcholinesterase inhibitor)				
	(2) Propranolol (beta-blocker)				
	(3) Fluoxetine (SSRI)				
*	(4) Reserpine (vesicular monoamine transporter inhibitor)				
68.	Which class of drugs increases synaptic dopamine by blocking the				
	dopamine transporter?				
	(1) SSRIs (2) DAT inhibitors (e.g., cocaine)				
	(3) MAO inhibitors (4) COMT inhibitors				
69.	Cell viability assays are used to assess:				
	(1) DNA sequence				
	(2) Enzyme kinetics				
•	(3) Cell survival and cytotoxicity				
	(4) Drug solubility				

Question	Questions		
No.			
70.	What happens when a high dose of acetylcholine (ACh) is administered		
	after atropine?		
	(1) Bradycardia and fall in blood pressure due to parasympathetic		
	stimulation		
	(2) Tachycardia and rise in blood pressure due to stimulation of		
	sympathetic ganglia and catecholamine release		
4	(3) No cardiovascular effect due to complete muscarinic blockade		
	(4) Fall in blood pressure due to inhibition of sympathetic ganglia		
71.	Euthanasia should be adopted in which of the following conditions:		
	(1) When the animal is paralyzed and is not able to perform its		
	natural functions or it becomes incapable of independent		
	locomotion or it can no longer perceive the environment in an		
	intelligible manner		
	(2) If during the course of experimental procedure the animal has		
	been left with a recurring pain where in the animal exhibits		
	obvious signs of pain and suffering		
	(3) Where the non-termination of the life of the experimental animal		
-	will be life threatening to human beings or other animals		
	(4) All the above		
72.	Inhalant agents such as carbon dioxide (CO2) are used for euthanasia		
* .	because they:		
1 = -	(1) Induce pain before death		
	(2) Require physical restraint for long duration		
	(3) Cause rapid loss of consciousness with minimal distress		
	(4) Are ineffective in small rodents		

Question No. 73.	Questions The CCSEA functions under which Ministry?
73.	
	The state of the s
	(1) Ministry of Health and Family Welfare
	(2) Ministry of Science and Technology
	(3) Ministry of Environment, forest and Climate Change
	(4) Indian Council of Medical Research
74.	The Declaration of Helsinki was developed as a statement of ethical
	principles for:
84.	(1) Research on animal only
	(2) Medical research involving human subjects, including identifiable
	human material and data
,	(3) Epidemiological research only
	(4) Social science research involving interviews
75.	Which of the following statements about the literature review is
g i	wrong?
	(1) It helps identify gaps in existing research.
	(2) It provides a theoretical foundation for the current study.
	(3) It eliminates the need to collect primary data.
	(4) It helps refine research questions and hypotheses.
76.	In a normal distribution, mean, median, and mode are:
	(1) Equal (2) Unequal
	(3) Random (4) Independent

Question No.	^ Questions
77.	Which of the following best describes a conflict of interest in medical
	research?
	(1) When a researcher's personal or financial interests may influence
10 10 10 10 10 10 10 10 10 10 10 10 10 1	study outcomes
	(2) When a study is delayed due to lack of funding
	(3) When participants withdraw from a study
	(4) When ethical approval takes longer than expected
78.	The Declaration of Helsinki was first adopted in :
	(1) 1947 (2) 1964
	(3) 1975 (4) 1989
79.	In a single-blind study, the person unaware of treatment allocation is :
	(1) Only the subject
	(2) Only the investigator
	(3) Both subject and investigator
,	(4) The ethics committee
80.	Identify the preferred sampling for the population with finite size
	among the following:
	(1) Systematic sampling (2) Purposive sampling
	(3) Cluster sampling (4) Area sampling
81.	The principle of non-maleficence is best summarized as:
	(1) Act for the greatest good (2) Respect autonomy
	(3) First, do no harm (4) Ensure justice

Question No.			
82.	What are the factors affecting sample size?		
	(1) Sampling design and statistical analysis		
	(2) Level of precision and level of confidence		
	(3) Degree of variability and non-response rate		
	(4) All the above		
83.	The 3Rs principle advocated by CCSEA stands for:		
	(1) Replacement, Reduction, and Refinement		
	(2) Reuse, Regulation, and Reproduction		
	(3) Randomization, Reliability, and Replication		
	(4) Replacement, Reporting, and Recording		
84.	The main difference between parametric and non-parametric tests is		
	that:		
	(1) Non-parametric tests are always more powerful		
-	(2) Parametric tests can be used with any type of data		
	(3) Parametric tests make assumptions about population parameters;		
	non-parametric tests do not		
,	(4) Non-parametric tests require normal distribution		
85.	Which of the following is incorrect?		
-	(1) Low p-value indicates that results are statistically significant.		
19	(2) High p-value indicates results are not statistically significant.		
	(3) ANOVA assumes null hypothesis is true.		
	(4) None of the above		

Question	Questions			
No.				
86.	What are the three major principles laid down by The Belmont Rep			
	(1979)?			
	(1) Randomization, reproducibility, and reliability			
	(2) Respect for persons, beneficence, and justice			
1	3) Confidentiality, analysis, and documentation			
W	(4) Control, intervention, and random sampling			
87.	A researcher divides the population into several groups based on			
	geographical regions and then randomly selects a few groups for study.			
	This is an example of a:			
	(1) Simple random sample (2) Systematic sample			
	(3) Cluster sample (4) Stratified sample			
88.	The principle of beneficence requires the researcher to:			
y .	(1) Publish all results immediately			
	(2) Maintain blinding during trials			
	(3) Maximize possible benefits and minimize potential harm			
	(4) Avoid informed consent			
89.	According to CCSEA, selection of euthanasia method depends on :			
	(1) Researcher's convenience			
1	(2) Animal species, size, age, and purpose of euthanasia			
	(3) Institutional budget			
	(4) Type of publication			
90.	According to ICMR, all clinical drug trials in India must be registered			
	with:			
	(1) World Health Organization			
	(2) Food and Drug Administration			
	(3) Clinical Trials Registry-India			
	(4) Central Bureau of Health Research			

Question No.				
91.	Which of the following is not a characteristic of research?			
d	(1) Systematic (2) Logical			
4	(3) Biased (4) Empirical	a v		
92.	Which of the following is not a type of parametric test?			
	(1) Chi square test (2) ANOVA			
	(3) Correlation coefficient (4) t test			
93.	Quarantine for newly received animals is necessary to:	¥		
	(1) Allow acclimatization and detect infections			
# 2	(2) Reduce housing space	-		
	(3) Train the animals for experiments			
	(4) Minimize feed consumption			
94.	CCSEA recommends that animal housing rooms must be	CCSEA recommends that animal housing rooms must be maintained		
	at:			
	(1) Any convenient temperature	(1) Any convenient temperature		
	(2) Temperature and humidity suitable for each species	(2) Temperature and humidity suitable for each species		
2	(3) Low humidity and poor ventilation			
• .	(4) The same temperature for all animals			
95.	Which document preceded and influenced the Declaration of Helsinki?			
- , · · ·	(1) Belmont Report (2) Nuremberg Code			
	(3) CIOMS Guidelines (4) ICH-GCP Guideli	nes		
96.	The hypothesis which develops while planning the research	is:		
	(1) Working hypothesis (2) Research hypothe			
	(3) Null hypothesis (4) Complex hypothe			

	Code-b		
Question No.	Questions		
97.	Pearson correlation coefficient, denoted by r, measures:		
9	(1) The scattering strength of data for a statistical series		
	(2) The strength of the correlation between the mean and median		
	(3) The strength of the correlation between two numerical parameters		
* * '	(4) The tendency of simultaneous increase or decrease, or inverse		
	evolution, for two numerical parameters		
98.	Hypothesis is a:		
2. Tu	(1) Statement that can be tested (2) Theory		
	(3) Fact (4) Law		
99.	hat is the full form of CCSEA?		
9	(1) Committee for Control and Supervision of Experiments on Animals		
	(2) Central Committee for Supervision of Ethical Activities		
	Council for Care and Safety of Experimental Animals		
#7 3K	(4) Committee for Certification of Scientific Animal Experiments		
100.	A variable that can be manipulated by the researcher is:		
	(1) Dependent variable (2) Independent variable		
25	(3) Controlled variable (4) Extraneous variable		

SET-"Y" (Total No. of printed pages : 20)

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE, November-2025

(PHARMACEUTICAL SCIENCES)

10043 Sr. No.____

Code



Γime : 1¼ Hours	Total Quest	ions : 100	Max. Marks: 100
Roll No.	(in figure)		(in words)
Name :			·
Father's Name :		Mother's Name:	
Date of Examination:			· ·

(Signature of the candidate)

(Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. All questions are compulsory.

2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.

3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by

the candidate.

- 4. Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- 5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
- 6. There will be negative marking and a deduction of 0.25 marks for each wrong answers. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.

7. Use only Black or Blue BALL POINT PEN of good quality in the OMR Answer-

Sheet.

8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.



Question No.	Questions			
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No.	Questions		
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Question	Questions			
No. 14.	The main difference between parametric and non-parametric tests is			
	that:			
and the second	(1) Non-parametric tests are always more powerful			
-	(2) Parametric tests can be used with any type of data			
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4900000				

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Trees C.	(3) Correlation coefficient (4) t test			
	1			

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(6)

			Coue-c
Question No.		Questions	5
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30.	A variable that can be man	nipulated by th	ne researcher is :
	(1) Dependent variable	(2)	Independent variable
	(3) Controlled variable	(4)	Extraneous variable
31.	Intentional adulteration w	ith the purpos	se of defrauding is termed:
	(1) Substitution	(2)	Sophistication
	(3) Deterioration	(4)	Spoilage
32.	The Si-OH groups on silica	a are also knov	vn as :
-	(1) Carboxyl groups	(2)	Hydroxyl groups
	(3) Phenolic groups	(4)	Carbonyl groups
33.	Swelling index is determin	ned for :	•
	(1) Isphagula	(2)	Digitalis
*	(3) Clove	(4)	Aloes
34.	Which of the following crude drug is not used in the treatment of		
,	hypertension?		
4 (1) (1)	(1) Digitalis	(2)	Rauwolfia
	(3) Squill	(4)	Stropanthus

Question No.		Que	stions		
35.	Retention time in HPLC or GC mainly depends on:				
Souther chapter	(1) The detector sensitivity only				
1	(2)	The interaction of analyte w	ith the	e stationary phase and mobile	
9 14		phase composition			
	(3)	The color of the analyte			
	(4)	The sample injection volume	only		
36.	"Lil	ke with like" is the principle of	:		
	(1)	Homeopathy	(2)	Ayurveda	
	(3)	Unani	(4)	Siddha	
37.	Eugenol is the plant constituent of:				
	(1)	Amla	(2)	Hibiscus	
	(3)	Senna	(4)	Clove	
38.	Match the following natural drugs with their therapeutic uses:				
	Dr			rapeutic uses	
,	a.	Liquorice	1.	CNS stimulant	
. T. ()	b.	Senna	2.	Expectorant	
	c.	Nux vomica	3.	Laxative	
	d.	Digitalis	4.	Cardiotonic	
	(1)	a-1, b-2, c-3, d-4			
	(2)	a-3, b-4, c-2, d-1			
-	(3)	a-4, b-1, c-3, d-2			
,	(4)	a-2, b-3, c-1, d-4			
39.	Total Ash value in the case of crude drug signifies:				
	(1)	Organic content of the drug			
	(2)	Cellular content of the drug			
7 2	(3)	Inorganic content of the drug	5		
	(4)	Phytoconstituents of the dru	g		

Question No.	Q	uestions	S
40.	Organoleptic evaluation is an ex	ample of	f which type of study?
	(1) Microscopic	(2)	Biological
	(3) Technical	(4)	Morphological
41.	An unequal distribution of color	on the s	urface of tablet is called :
	(1) Cracking	(2)	Mottling
	(3) Picking	(4)	Chipping
42.	Which of the following is pH sen	sitive bi	oerodible polymer :
	(1) Polymethacrylate	(2)	HPMC
	(3) NaCMC	(4)	None
43.	Magnesium stearate is used as:		
	(1) Antioxidant	(2)	Antiadherent
	(3) Binder	(4)	Film Coating
44.	The most important water-r	niscible	vehicle used in parenteral
	formulations is:		
	(1) Ethyl alcohol	(2)	Propylene glycol
	(3) Liquid polyethylene glycol	(4)	All of the above
45.	Carr's Index is related to:		
	(1) Flow property	(2)	Solubility
	(3) Partition coefficient	(4)	All of the above
46.	From the dissolution point of vi-	ew, whic	ch of the following dosage forms
-	is least absorbed?		
	(1) Coated tablets	(2)	Solution
,	(3) Suspension	(4)	Uncoated tablets

Question No.	Questions				
47.	What term describes the separation of solid particles from a				
	suspension over time, leading to the settling of particles at the bo				
	of the container?				
	(1) Emulsification (2) Sedimentation				
	(3) Precipitation (4) Dissolution				
48.	Which of the following is most stable form?				
` .	(1) Powder (2) Syrup				
	(3) Gel (4) Suspensions				
49.	High speed homogenization and atomization of feed into a stream of				
	hot air is associated with:				
	(1) Spray Drying				
	(2) Centrifugal extrusion				
	(3) Spray congealing				
2	(4) Multiorifice centrifugal technique				
50.	Photodegradation of a drug can be prevented by:				
	(1) Refrigerating the product.				
	(2) Using an in-line filter during administration.				
-	(3) Dispensing the drug in an amber-colored or opaque container.				
	(4) Adjusting the pH of the solution.				
51.	According to Good clinical Practice (GCP), the investigator must report				
	any serious adverse event (SAE) to the Ethics committee within:				
	(1) 7 days (2) 15 days				
	(3) 24 hours (4) 1 month				

Questions
ANOVA is used to compare:
(1) The medians of two groups
(2) The means of three or more groups
(3) The variances of two groups only
(4) Proportions in categorical data
The Declaration of Helsinki was developed by which organization?
(1) World Health Organization
(2) United Nations
(3) World Medical Association
(4) International Council for harmonization
Indentify the option that is not a characteristic of qualitative research.
(1) Thematic analysis (2) Case study
(3) Discourse analysis (4) Survey method
The Nuremberg Code (1947) was developed after:
(1) World War II unethical human experiments
(2) The Tuskegee Syphilis Study
(3) The Thalidomide tragedy
(4) World Health Organization's founding
Medical ethics is primarily based on :
(1) Economic considerations
(2) Professional competition
(3) Human dignity, rights, and moral duty
(4) Institutional politics

Question No.	Questions			
57.	Which of the following is not a type of research design?			
,	(1) Exploratory (2) Descriptive			
	(3) Experimental (4) Accidental			
58.	Euthanasia involves:			
	(1) Intentionally ending life to relieve suffering			
	(2) Providing emotional support to the terminally ill			
	(3) Withholding data publication			
	(4) Ensuring autonomy			
59.	Which of the following conditions is not suitable for proper animal			
	housing in a research facility?			
	(1) Provide an escape-proof enclosure that ensures the animal's			
	safety.			
	(2) Provide easy access to food and water.			
	(3) Maintain poor ventilation to minimize air circulation and noise.			
Section 2	(4) Keep the animal dry and clean, consistent with species			
	requirements.			
60.	According to the Declaration of Helsinki, who is responsible for			
	protecting the life, health, dignity, integrity, and privacy of research			
	subjects?			
9	(1) The sponsor			
4	(2) The ethics committee			
2	(3) The physician or health professional conducting the research			
ili de la companya de	(4) The government authority			

Question No.	Questions			
61.	Wha	at is the bond angle in sp hybrid	lizati	on?
Ş	(1)	109.5°	(2)	120°
	(3)	180°	(4)	119.5°
62.	LiA	1H ₄ is not used in reduction of :		
,	(1)	Alkene double bond	(2)	Carbonyl Carbon
•,	(3)	Amide	(4)	Ester .
63.	CO	MSIA is associated with:		
	(1)	Virtual Screening	(2)	Molecular Docking
	(3)	QSAR	(4)	ADME Prediction
64.	Ste	reoisomer of cyclic carbohydrate	is kr	nown as:
	(1)	Epimer	(2)	Anomer
	(3)	Enantiomer	(4)	Diastereomer
65.	Bip	henyl show following kind of iso	meris	sm:
	(1)	Optical isomer	(2)	Configurational isomer
	(3)	Atropisomers	(4)	R and S isomer
66.	Cla	vulanic acid has beta-lactam rir	g fus	ed with:
	(1)	Thienyl system	(2)	Thiadiazole
	(3)	Thiazolidone	(4)	Oxazolidine
67.	Wh	ich of the following is not a synt	hetic	drug?
	(1)	Isoniazid	(2)	Rifampin
	(3)	Pyrazinamide	(4)	Ethionamide
68.	What is most logical and molecular approach to drug discovery?			
	(1)	Synthetic organic chemistry		
	(2)	Structure Based Drug Design		
	(3)	QSAR		
ř.,	(4)	All		

Question No.	Questions					
69.	At which position penicillin has carboxylic acid group:					
	(1) C-3 (2) C-2					
	(3) C-6 (4) C-7					
70.	Ethosuximide belongs to following chemical class of anticonvulsant:					
	(1) Hydantoin (2) Barbiturate					
	(3) Succinamide (4) Oxazolidinedione					
71.	A drug having high affinity but low intrinsic activity is called:					
	(1) Partial agonist					
	(2) Antagonist					
	(3) Non-competitive anatagonism					
	(4) Competitive antagonism					
72.	A high degree of protein binding generally makes a drug long-acting					
	because:					
	(1) The bond fraction is rapidly metabolized and excreted					
** (i)	(2) The bond fraction is not available for metabolism or excretion					
	(3) Protein binding increases the rate of drug elimination					
,	(4) Protein-bound drugs cannot cross biological membranes					
73.	Neurotransmission refers to:					
	(1) Transfer of nerve impulses through chemical messengers					
-	(2) Electrical conduction through bone					
	(3) Secretion of hormones by glands					
	(4) Storage of neurotransmitters in muscles					
74.	Pilocarpine is classified as:					
	(1) Cholinesterase inhibitor (2) Sympathemic (2)					
	(3) Cholinomimetic					
DUD						

PHD-EE- November, 2025 (Pharmaceutical Sciences) Code-C

Question No.	Questions				
75.	Glutamate is primarily involved in:				
	(1) Inhibitory transmission (2) Excitatory transmission				
	(3) Hormonal signaling (4) Protein synthesis				
76.	The primary mechanism by which reserpine depletes monoamines is:				
	(1) Inhibition of monoamine oxidase				
	(2) Blockade of vesicular monoamine transporter (VMAT)				
	(3) Inhibition of catechol-O-methyltransferase				
	(4) Blocking dopamine receptors				
77.	Which pharmacological agent would increase acetylcholine levels a				
	synapses by inhibiting its breakdown?				
	(1) Neostigmine (acetylcholinesterase inhibitor)				
	(2) Propranolol (beta-blocker)				
	(3) Fluoxetine (SSRI)				
	(4) Reserpine (vesicular monoamine transporter inhibitor)				
78.	Which class of drugs increases synaptic dopamine by blocking th				
	dopamine transporter?				
	(1) SSRIs (2) DAT inhibitors (e.g., cocaine)				
	(3) MAO inhibitors (4) COMT inhibitors				
79.	Cell viability assays are used to assess:				
	(1) DNA sequence				
	(2) Enzyme kinetics				
	(3) Cell survival and cytotoxicity				
	(4) Drug solubility				

Question No.	Questions
80.	What happens when a high dose of acetylcholine (ACh) is administered
·	after atropine?
•	(1) Bradycardia and fall in blood pressure due to parasympathetic
	stimulation
	(2) Tachycardia and rise in blood pressure due to stimulation of
	sympathetic ganglia and catecholamine release
	(3) No cardiovascular effect due to complete muscarinic blockade
,	(4) Fall in blood pressure due to inhibition of sympathetic ganglia
81.	Which of the following is a probability sampling method?
01.	(1) Simple random sampling (2) Purposive sampling
	(3) Convenience sampling (4) Snowball sampling
82.	A placebo is substance that:
02.	(1) Has active therapeutic effect
	(2) Has no therapeutic effect and is used as a control
	(3) Always cause adverse reactions
	(4) Is used to increase drug absorption
83.	What is full form of SPSS?
	(1) Software Package for Sample Statistics
	(2) Statistical Program for Social Services
- Andrews	(3) Systematic Processing for Statistical Studies
	(4) Statistical Package for Social Sciences
84.	Sampling is:
	(1) Studying the entire population
	(2) Studying a portion of the population
or projection of	(3) Studying secondary data
	(4) None of the above

	Coue-C		
Question No.	Questions		
85.	When $p < 0.05$, the finding is said to be:		
	(1) Statistically significant (2) Clinically significant only		
	(3) Not significant (4) Randomly significant		
86.	The informed consent process must include:		
	(1) Purpose, risks, benefits, right to withdraw, and confidentiality		
	details		
	(2) Only name and signature of participant		
	(3) Financial compensation alone		
	(4) Medical history of investigator		
87.	A normal distribution curve is:		
·	(1) Bell-shaped and symmetrical (2) Skewed to the right		
	(3) Skewed to the left (4) Rectangular		
88.	From D is related to which of the following:		
	(1) Record of Animals Acquired and Experiments performed		
	(2) Record of Animals bred/acquired		
	(3) Record of Animal sold		
	(4) CCSEA nominee application form		
89.	The test statistic used in ANOVA is:		
	(1) t-value (2) z-score		
•	(3) χ^2 value (4) F-ratio		
90.	What is the use of Regression analysis?		
	(1) Calculate measures of central tendency		
	(2) Determine the frequency of observations		
,	(3) Understand the relationship between a dependent variable and		
	one or more independent variables		
•	(4) Detect outliers in a dataset		

Question No.	Qı	estions	5
91.	Which law relates the absorbanc	e with c	oncentration and path length?
	(1) Newton's Law	(2)	Beer-Lambert's Law
· .	(3) Ohm's Law	(4)	Dalton's Law
92.	UV-Visible spectroscopy measure	es the :	
	(1) Absorption of infrared light		
	(2) Emission of UV light		
	(3) Absorption of UV or visible	light	
	(4) Reflection of UV light		
93.	In IR spectroscopy, absorption is	due to :	
	(1) Electronic transitions	(2)	Vibration transitions
	(3) Rotational transitions	(4)	Nuclear transitions
94.	Coupling constant (J) value:		·
	(1) Depends upon magnetic fiel	d	
e e	(2) Is independent of magnetic	field	
x 2	(3) Depends on reference stand	ard used	l .
-	(4) Depends on solvent used		
95.	When absorption intensity of compound is decreased, the phenomenon		
	is known as:		of the phonomers
p - 3	(1) Hyperchromic shift	(2)	Hypochromic shift
,	(3) Bathochromic Shift	(4)	None
96.	In aldehyde, the C=O stretching vibration appears approximately at:		
	(1) 1725cm ⁻¹	(2)	1660cm ⁻¹
	(3) 2750cm ⁻¹	(4)	3300cm-1

PHD-EE- November, 2025 (Pharmaceutical Sciences) Code-C
(18)

	OUGE-		
Questions			
Which of the following has highest chemical shift value?			
(1) CH_3I (2) CH_3Br			
(3) CH_3F (4) CH_3Cl			
In mass spectrometry 81Br containing compounds show:			
(1) M+1 Peak (2) M+2 Peak			
(3) M+3 Peak (4) M+4 Peak			
All solvents are used to record NMR spectra except:			
(1) DMSO (2) $CDCl_3$			
(3) C ₂ H ₅ OH (4) Deuterated benz	zene		
Reverse phase HPLC uses:			
(1) Non polar solvent/polar column			
(2) Polar solvent/polar column			
(3) Polar solvent/Non polar column			
(4) All			
	Which of the following has highest chemical shift value? (1) CH ₃ I (2) CH ₃ Br (3) CH ₃ F (4) CH ₃ Cl In mass spectrometry ⁸¹ Br containing compounds show: (1) M+1 Peak (2) M+2 Peak (3) M+3 Peak (4) M+4 Peak All solvents are used to record NMR spectra except: (1) DMSO (2) CDCl ₃ (3) C ₂ H ₅ OH (4) Deuterated benefits the solvent solvent polar column (2) Polar solvent/polar column (3) Polar solvent/Non polar column		

SET-"Y" (Total No. of printed pages : 20)

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

PHD-EE, November-2025

(PHARMACEUTICAL	SCIENCES)
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10044

Code



Time: 1¼ Hours	Total Quest	ions : 100	Max. Marks: 100
Roll No	(in figure)		(in words)
Name :		Date of Birth:	1
Father's Name:		Mother's Name:	
Date of Examination:	-		

(Signature of the candidate)

(Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. All questions are compulsory.

2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.

8. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by

the candidate.

EXAMINATION.

- 4. Question Booklet along-with answer key of all the A,B,C and D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case will be considered.
- The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
- 6. There will be negative marking and a deduction of 0.25 marks for each wrong answers. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.

7. Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer-Sheet.

8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE

SEAL CONTROLLED

Question	Questions
No. 1.	Which of the following is a probability sampling method?
	(1) Simple random sampling (2) Purposive sampling
	(3) Convenience sampling (4) Snowball sampling
2.	A placebo is substance that:
.0 *	(1) Has active therapeutic effect
	(2) Has no therapeutic effect and is used as a control
	(3) Always cause adverse reactions
	(4) Is used to increase drug absorption
3.	What is full form of SPSS?
	(1) Software Package for Sample Statistics
	(2) Statistical Program for Social Services
120	(3) Systematic Processing for Statistical Studies
	(4) Statistical Package for Social Sciences
4.	Sampling is:
	(1) Studying the entire population
	(2) Studying a portion of the population
	(3) Studying secondary data
	(4) None of the above
5.	When p < 0.05, the finding is said to be :
	(1) Statistically significant (2) Clinically significant only
- 1	(3) Not significant (4) Randomly significant

Question No.	Questions		
6.	The informed consent process must include:		
	(1) Purpose, risks, benefits, right to withdraw, and confidentiality		
	details		
	(2) Only name and signature of participant		
	(3) Financial compensation alone		
	(4) Medical history of investigator		
7.	A normal distribution curve is:		
	(1) Bell-shaped and symmetrical (2) Skewed to the right		
	(3) Skewed to the left (4) Rectangular		
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	(1) Record of Animals Acquired and Experiments performed		
	(2) Record of Animals bred/acquired		
	(3) Record of Animal sold		
	(4) CCSEA nominee application form		
9.	The test statistic used in ANOVA is:		
	(1) t-value (2) z-score		
	(3) χ ² value (4) F-ratio		
10.	What is the use of Regression analysis?		
	(1) Calculate measures of central tendency		
	(2) Determine the frequency of observations		
	(3) Understand the relationship between a dependent variable and		
	one or more independent variables		
	(4) Detect outliers in a dataset		

Question No.		Que	stion	S
11.	Intentional adulteration with the purpose of defrauding is termed:			
	(1) 8	Substitution	(2)	Sophistication
	(3) I	Deterioration	(4)	Spoilage
12.	The S	Si-OH groups on silica are also	knov	vn as:
	(1) (Carboxyl groups	(2)	Hydroxyl groups
	(3) I	Phenolic groups	(4)	Carbonyl groups
13.	Swell	ing index is determined for :		· · · · · · · · · · · · · · · · · · ·
	(1) I	sphagula	(2)	Digitalis
	(3)	Clove	(4)	Aloes
14.	Which	h of the following crude dru	ıg is	not used in the treatment of
	hyper	tension?		
*	(1) I	Digitalis	(2)	Rauwolfia
	(3) S	Squill	(4)	Stropanthus
15.	Retention time in HPLC or GC mainly depends on:			
	(1) T	The detector sensitivity only		
	(2) T	The interaction of analyte wi	th the	e stationary phase and mobile
	. р	hase composition		
	(3) T	he color of the analyte	Si .	
	(4) T	he sample injection volume o	nly	
16.	"Like	with like" is the principle of :		
	(1) H	Iomeopathy	(2)	Ayurveda
	(3) U	Inani	(4)	Siddha

Question No.	Qu	estion	rs Code-
17.	7. Eugenol is the plant constituent of:		
	(1) Amla	(2)	Hibiscus
	(3) Senna	(4)	Clove
18.	Match the following natural drugs	with	their therapeutic uses:
	Drug		rapeutic uses
	a. Liquorice	1.	CNS stimulant
	b. Senna	2.	Expectorant
	c. Nux vomica	3.	Laxative
	d. Digitalis	4.	Cardiotonic
	(1) a-1, b-2, c-3, d-4		
	(2) a-3, b-4, c-2, d-1		
	(3) a-4, b-1, c-3, d-2		
	(4) a-2, b-3, c-1, d-4		
19.	Total Ash value in the case of crud	e drug	signifies :
	(1) Organic content of the drug		11
	(2) Cellular content of the drug		9. 2
	(3) Inorganic content of the drug		**
	(4) Phytoconstituents of the drug		
20.	Organoleptic evaluation is an exan	ple of	which type of started
	(1) Microscopic	(2)	Biological
	(3) Technical	(4)	
21.	What is the bond angle in sp hybrid	100 200	Morphological
	(1) 109.5°		
	(3) 180°	(2)	1200
	(-)	(4)	119.50

Question No.	Que	estion	s
22.	LiA1H ₄ is not used in reduction of:		
2	(1) Alkene double bond	(2)	Carbonyl Carbon
	(3) Amide	(4)	Ester
23.	COMSIA is associated with:		5 t
-	(1) Virtual Screening	(2)	Molecular Docking
	(3) QSAR	(4)	ADME Prediction
24.	Stereoisomer of cyclic carbohydra	te is kr	nown as:
	(1) Epimer	(2)	Anomer
	(3) Enantiomer	(4)	Diastereomer
25.	Biphenyl show following kind of is	someri	sm:
	(1) Optical isomer	(2)	Configurational isomer
	(3) Atropisomers	(4)	R and S isomer
26. Clavulanic acid has beta-lactam ring fused with			ed with:
1	(1) Thienyl system	(2)	Thiadiazole
1	(3) Thiazolidone	(4)	Oxazolidine
27.	Which of the following is not a syr	ithetic	drug?
	(1) Isoniazid	(2)	Rifampin
	(3) Pyrazinamide	(4)	Ethionamide
28.	What is most logical and molecula	ır appr	oach to drug discovery?
	(1) Synthetic organic chemistry		
,	(2) Structure Based Drug Design	1	•
	(3) QSAR		•
	(4) All		

Question				Code-D
No.		Qu	estion	s
29.	At which position penicillin has carboxylic acid group:			lic acid group :
8.	(1)	C-3	(2)	C-2
•	(3)	C-6	(4)	C-7
30.	Eth	nosuximide belongs to followin	g chem	ical class of anticonvulsant :
	(1)	Hydantoin	(2)	Barbiturate
	(3)	Succinamide	(4)	Oxazolidinedione
31.	Wh	ich law relates the absorbance	e with c	concentration and path length?
	(1)	Newton's Law	(2)	Beer-Lambert's Law
	(3)	Ohm's Law	(4)	Dalton's Law
32.	UV	-Visible spectroscopy measure	s the :	
	(1)	Absorption of infrared light		
	(2)	Emission of UV light		
	(3)	Absorption of UV or visible l	ight	
	(4)	Reflection of UV light		
33.	In l	R spectroscopy, absorption is	due to :	
	(1)	Electronic transitions	(2)	Vibration transitions
V_ =	(3)	Rotational transitions	(4)	Nuclear transitions
34.	Cou	pling constant (J) value:		
	(1)	Depends upon magnetic field		
	(2)	Is independent of magnetic f	ield	
	(3)	Depends on reference standa	rd used	1 . =
2	(4)	Depends on solvent used		
35.	Wh	en absorption intensity of con	pound	is decreased, the phenomenon
. 8	is k	nown as :	= 2	, the phenomenon
	(1)	Hyperchromic shift	(2)	Hypochromic shift
	(3)	Bathochromic Shift	(4)	None

(6)

Question No.	Que	stion	ıs		
36.	36. In aldehyde, the C=O stretching vibration appears approxin				
	(1) 1725cm ⁻¹	(2)	1660cm ⁻¹		
	(3) 2750cm ⁻¹	(4)	3300cm ⁻¹		
37.	Which of the following has highest	chem	nical shift value?		
	(1) CH ₃ I	(2)	CH ₃ Br		
-	(3) CH ₃ F	(4)	CH ₃ Cl		
38.	In mass spectrometry 81Br contain	ing co	mpounds show :		
	(1) M+1 Peak	(2)	M+2 Peak		
	(3) M+3 Peak	(4)	M+4 Peak		
39.	All solvents are used to record NM	R spe	ctra except :		
	(1) DMSO	(2)	$CDCl_3$		
	(3) C ₂ H ₅ OH	(4)	Deuterated benzene		
40.	Reverse phase HPLC uses:				
	(1) Non polar solvent/polar colum	n			
* 3	(2) Polar solvent/polar column				
	(3) Polar solvent/Non polar colum	n.			
1	(4) All				
41.	According to Good clinical Practice (GCP), the investigator must report				
1111	any serious adverse event (SAE) to	the E	Ethics committee within:		
	(1) 7 days	(2)	15 days		
	(3) 24 hours	(4)	1 month		
42.	ANOVA is used to compare:	101	741		
	(1) The medians of two groups				
	(2) The means of three or more gr	oups			
	(3) The variances of two groups or	ly			
	(4) Proportions in categorical data				

Question No.	Questions	
43.	The Declaration of Helsinki was developed by which organization	
	(1) World Health Organization	
L*	(2) United Nations	
140	The control of the co	
	The state of the s	
44.	The state of the s	
77.	Indentify the option that is not a characteristic of qualitative research.	
	(1) Thematic analysis (2) Case study	
17	(3) Discourse analysis (4) Survey method	
45.	The Nuremberg Code (1947) was developed after:	
	(1) World War II unethical human experiments	
	(2) The Tuskegee Syphilis Study	
	(3) The Thalidomide tragedy	
	(4) World Health Organization's founding	
46.	Medical ethics is primarily based on :	
	(1) Economic considerations	
	(2) Professional competition	
	(3) Human dignity, rights, and moral duty	
	(4) Institutional politics	
47.	Which of the following is not a type of research design?	
2 E	IIII RYDIOPOTOWY	
	(3) Experimental	
48.	Euthanasia involves : (4) Accidental	
	(1) Intentionally ending life to relieve suffering	
	(2) Providing emotional support to the terminally ill	
	(3) Withholding data publication	
	(4) Ensuring autonomy	

	Code-D		
Question No.	Questions		
49.	Which of the following conditions is not suitable for proper animal		
	housing in a research facility?		
	(1) Provide an escape-proof enclosure that ensures the animal's		
	safety.		
	(2) Provide easy access to food and water.		
	(3) Maintain poor ventilation to minimize air circulation and noise.		
	(4) Keep the animal dry and clean, consistent with species		
	requirements.		
50.	According to the Declaration of Helsinki, who is responsible for		
	protecting the life, health, dignity, integrity, and privacy of research		
	subjects?		
	(1) The sponsor		
	(2) The ethics committee		
	(3) The physician or health professional conducting the research		
	(4) The government authority		
51.	The principle of non-maleficence is best summarized as:		
	(1) Act for the greatest good (2) Respect autonomy		
	(3) First, do no harm (4) Ensure justice		
52.	What are the factors affecting sample size?		
-	(1) Sampling design and statistical analysis		
	(2) Level of precision and level of confidence		
	(3) Degree of variability and non-response rate		
	(4) All the above		

Question	Questions
No.	The 3Rs principle advocated by CCSEA stands for:
53.	
	(1) Replacement, Reduction, and Refinement
	(2) Reuse, Regulation, and Reproduction
	(3) Randomization, Reliability, and Replication
	(4) Replacement, Reporting, and Recording
54,	The main difference between parametric and non-parametric tests is
	that:
/	(1) Non-parametric tests are always more powerful
	(2) Parametric tests can be used with any type of data
	(3) Parametric tests make assumptions about population parameters;
	non-parametric tests do not
	(4) Non-parametric tests require normal distribution
55.	Which of the following is incorrect?
	(1) Low p-value indicates that results are statistically significant.
	(2) High p-value indicates results are not statistically significant.
	(3) ANOVA assumes null hypothesis is true.
	(4) None of the above
56.	What are the three major principles laid down by The Belmont Report
	(1979)?
	(1) Randomization, reproducibility, and reliability
	(2) Respect for persons, beneficence, and justice
1	(3) Confidentiality, analysis, and documentation
-11	(4) Control, intervention, and random sampling

Question No.	Questions						
57.	A researcher divides the population into several groups based on						
	geographical regions and then randomly selects a few groups for study.						
	This is an example of a:						
	(1) Simple random sample (2) Systematic sample						
(4) I I	(3) Cluster sample (4) Stratified sample						
58.	The principle of beneficence requires the researcher to:						
	(1) Publish all results immediately						
	(2) Maintain blinding during trials						
	(3) Maximize possible benefits and minimize potential harm						
	(4) Avoid informed consent						
59.	According to CCSEA, selection of euthanasia method depends on:						
	(1) Researcher's convenience						
	(2) Animal species, size, age, and purpose of euthanasia						
	(3) Institutional budget						
*	(4) Type of publication						
60.	According to ICMR, all clinical drug trials in India must be registered						
	with:						
æ	(1) World Health Organization						
	(2) Food and Drug Administration						
	(3) Clinical Trials Registry-India						
	(4) Central Bureau of Health Research						

Question No.	Questions
61.	Euthanasia should be adopted in which of the following conditions:
160 7	(1) When the animal is paralyzed and is not able to perform it
	natural functions or it becomes incapable of independen
	locomotion or it can no longer perceive the environment in a
	intelligible manner
	(2) If during the course of experimental procedure the animal has
	been left with a recurring pain where in the animal exhibits
*	obvious signs of pain and suffering
	(3) Where the non-termination of the life of the experimental animal
	will be life threatening to human beings or other animals
	(4) All the above
62.	Inhalant agents such as carbon dioxide (CO2) are used for euthanasia
	because they:
1 .1	(1) Induce pain before death
	(2) Require physical restraint for long duration
	(3) Cause rapid loss of consciousness with minimal distress
	(4) Are ineffective in small rodents
63.	The CCSEA functions under which Ministry?
	(1) Ministry of Health and Family Welfare
	(2) Ministry of Science and Technology
	(3) Ministry of Environment, forest and Climete Cl
	(4) Indian Council of Medical Research

Page 1	Coue-D
Question No.	Questions
64.	The Declaration of Helsinki was developed as a statement of ethical
	principles for :
*	(1) Research on animal only
	(2) Medical research involving human subjects, including identifiable
	human material and data
	(3) Epidemiological research only
	(4) Social science research involving interviews
65.	Which of the following statements about the literature review is
	wrong?
	(1) It helps identify gaps in existing research.
	(2) It provides a theoretical foundation for the current study.
	(3) It eliminates the need to collect primary data.
	(4) It helps refine research questions and hypotheses.
66.	In a normal distribution, mean, median, and mode are:
	(1) Equal (2) Unequal
	(3) Random (4) Independent
67.	Which of the following best describes a conflict of interest in medica
, #	research?
	(1) When a researcher's personal or financial interests may influence
	study outcomes
	(2) When a study is delayed due to lack of funding
8	(3) When participants withdraw from a study
, I	(4) When ethical approval takes longer than expected
68.	The Declaration of Helsinki was first adopted in:
	(1) 1947 (2) 1964
9	(3) 1975 (4) 1989

(13)

Question No.							
69.	In a single-blind study, the person unawa	are of treatment allocation is:					
	(1) Only the subject	**					
	(2) Only the investigator						
	(3) Both subject and investigator						
	(4) The ethics committee						
70.	Identify the preferred sampling for th	e population with finite size					
	among the following:						
	(1) Systematic sampling (2)	Purposive sampling					
	(3) Cluster sampling (4)	Area sampling					
71.	An unequal distribution of color on the surface of tablet is called:						
	(1) Cracking (2)	Mottling					
	(3) Picking (4)	Chipping					
72.	Which of the following is pH sensitive bid						
	(1) Polymethacrylate (2)	HPMC					
	(3) NaCMC (4)	None					
73.	Magnesium stearate is used as:	,					
	(1) Antioxidant (2)	Antiadherent					
	(3) Binder (4)						
74.	The most important water-miscible	Film Coating					
	formulations is:	vehicle used in parenteral					
	(1) Ethyl alcohol (2)	D					
	(3) Liquid polyethylene glysel	Propylene glycol					
75.	Carr's Index is related to:	All of the above					
	(1) Flow property .	W100					
	(3) Partition coefficient	Solubility					
- W	(4)	All of the above					

PHD-EE- November, 2025 (Pharmaceutical Sciences) Code-D
(14)

Question	Questions					
No.	From the dissolution point of view, which of the following dosage forms					
76.	A STATE OF THE STA					
	is least absorbed?					
15	(1) Coated tablets (2) Solution					
	(3) Suspension (4) Uncoated tablets					
77.	What term describes the separation of solid particles from a					
	suspension over time, leading to the settling of particles at the bottom					
	of the container?					
* 20	(1) Emulsification (2) Sedimentation					
89	(3) Precipitation (4) Dissolution					
78.	Which of the following is most stable form?					
	(1) Powder (2) Syrup					
	(3) Gel (4) Suspensions					
79.	High speed homogenization and atomization of feed into a stream of					
	hot air is associated with:					
	(1) Spray Drying					
	(2) Centrifugal extrusion					
	(3) Spray congealing					
-	(4) Multiorifice centrifugal technique					
80.	Photodegradation of a drug can be prevented by:					
	(1) Refrigerating the product.					
	(2) Using an in-line filter during administration.					
	(3) Dispensing the drug in an amber-colored or opaque container.					
	(4) Adjusting the pH of the solution.					
	(X) Alaymorth Transfer of the second					

Question No.	Questions
81.	Which of the following is not a characteristic of research?
*	(1) Systematic (2) Logical
	(3) Biased (4) Empirical
82.	Which of the following is not a type of parametric test?
	(1) Chi square test (2) ANOVA
	(3) Correlation coefficient (4) t test
83.	Quarantine for newly received animals is necessary to:
	(1) Allow acclimatization and detect infections
	(2) Reduce housing space
	(3) Train the animals for experiments
	(4) Minimize feed consumption
84.	CCSEA recommends that animal housing rooms must be maintained
1,5	at:
	(1) Any convenient temperature
ue "	(2) Temperature and humidity suitable for each species
	(3) Low humidity and poor ventilation
	(4) The same temperature for all animals
85.	Which document preceded and influenced the Declaration of Helsinki?
	(1) Belmont Report (2) Nuremberg Code
	(3) CIOMS Guidelines (4) ICH-GCP Guidelines
86.	The hypothesis which develops while planning the research is:
	(1) Working hypothesis (2) Research hypothesis
	(3) Null hypothesis (4) Complex hypothesis

PHD-EE- November, 2025 (Pharmaceutical Sciences) Code-D
(16)

Question No.	Questions
87.	Pearson correlation coefficient, denoted by r, measures:
i.	(1) The scattering strength of data for a statistical series
	(2) The strength of the correlation between the mean and median
	(3) The strength of the correlation between two numerical parameters
	(4) The tendency of simultaneous increase or decrease, or inverse
	evolution, for two numerical parameters
88.	Hypothesis is a:
	(1) Statement that can be tested (2) Theory
	(3) Fact (4) Law
89.	What is the full form of CCSEA?
	(1) Committee for Control and Supervision of Experiments on Animals
	(2) Central Committee for Supervision of Ethical Activities
	(3) Council for Care and Safety of Experimental Animals
	(4) Committee for Certification of Scientific Animal Experiments
90.	A variable that can be manipulated by the researcher is:
	(1) Dependent variable (2) Independent variable
	(3) Controlled variable (4) Extraneous variable
91.	A drug having high affinity but low intrinsic activity is called:
	(1) Partial agonist
	(2) Antagonist
Ü	(3) Non-competitive anatagonism
	(4) Competitive antagonism

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Question No.	
92.	A high degree of protein binding generally makes a drug long-acting
9 1	because:
	(1) The bond fraction is rapidly metabolized and excreted
	(2) The bond fraction is not available for metabolism or excretion
	(3) Protein binding increases the rate of drug elimination
	(4) Protein-bound drugs cannot cross biological membranes
93.	Neurotransmission refers to:
¥	(1) Transfer of nerve impulses through chemical messengers
	(2) Electrical conduction through bone
	(3) Secretion of hormones by glands
	(4) Storage of neurotransmitters in muscles
94.	Pilocarpine is classified as :
	(1) Cholinesterase inhibitor (2) Sympathomimetic
	(3) Cholinomimetic (4) Cholinolytics
95.	Glutamate is primarily involved in :
1911	(1) Inhibitory transmission (2) Excitatory transmission
	(3) Hormonal signaling (4) Protein synthesis
96.	The primary mechanism by which reserpine depletes monoamines is:
	(1) Inhibition of monoamine oxidase
	(2) Blockade of vesicular monoamine transporter (VMAT)
	(3) Inhibition of catechol-O-methyltransferase
	(4) Blocking dopamine receptors

Question	Questions
97.	Which pharmacological agent would increase acetylcholine levels at
	synapses by inhibiting its breakdown?
	(1) Neostigmine (acetylcholinesterase inhibitor)
5	(2) Propranolol (beta-blocker)
	(3) Fluoxetine (SSRI)
	(4) Reserpine (vesicular monoamine transporter inhibitor)
98.	Which class of drugs increases synaptic dopamine by blocking the
00.	donamine transporter?
	(1) SSRIs (2) DAT inhibitors (e.g., cocaine)
	(3) MAO inhibitors (4) COMT inhibitors
99.	Cell viability assays are used to assess:
001	(1) DNA sequence
•	(2) Enzyme kinetics
	(3) Cell survival and cytotoxicity
	D colubility
100.	(4) Drug solubility What happens when a high dose of acetylcholine (ACh) is administered
	:2
	after atropine: (1) Bradycardia and fall in blood pressure due to parasympathetic
	1. lation
	(2) Tachycardia and rise in blood pressure due to stimulation of
	and catecholamine release
	Al cardiovascular effect due to complete muscarinic blockade
,	(3) No cardiovasco. (4) Fall in blood pressure due to inhibition of sympathetic ganglia

Q. NO.	A	В	trance exam dated 21.1	D
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2	1	1	3	2
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9	1	1	1	4
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46	1	1	1	3
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49	1	3	1	3
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Page 1 of 2

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97	4	3	1	1
98	4	1	2	2
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Joron Rakestamoso 21/11/25

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Page 2 of 2

All Page 2 of 2