UNIVERSITY OF THE PUNJAB

First Prof. A/2017
Examination:- Doctor of Pharmacy (Pharm.D.)

Roll No. ....

Subject: Pharmaceutical Chemistry-I (Organic)

PAPER: 1 (Old & New Course)

TIME ALLOWED: 3 hrs.

MAX. MARKS: 100

NOTE: *Attempt any FIVE questions. All questionis carry equal marks.*

Q. No. 1 a) Describe the factors effecting the stabilization of free radicals. 10

b) Define Pinacol-Pinacolone rearrangement and describe its reaction mechanism. 10

Q. No. 2 a) Write detail note on R, S and E, Z methods of configuration. 10

b) Explain Optical Isomerism with examples. 10

Q. No. 3 a) How ethylene glycol prepared? Mention at least three methods. 10

b) How primary, secondary and tertiary alcohols prepared simultaneously? Discuss methods for separation of primary, secondary and tertiary alcohols. 10

Q. No. 4 a) What is steric hindrance? Explain with examples. 10

b) What is resonance? Describe rules for drawing resonance structure. 10

Q. No. 5 What are Esters? Give methods of preparation, chemical properties and pharmaceutical applications. 20

Q. No. 6 Write note on the followings: 10, 10

a) Perkin Reaction   b) Metal Hydride Reduction

Q. No. 7 Describe methods of preparations, chemical reactions and pharmaceutical applications of Furan and Indole. 20

UNIVERSITY OF THE PUNJAB

First Prof. A/2017
Examination:- Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutical Chemistry-II (Biochemistry)
Pharmaceutical Biochemistry
PAPER: 2 (Old & New Course)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q. No. 1: (20)

Write the introduction, chemistry, physiological functions, regulation and disorders of growth hormone

Q. No. 2: (10+10)

a) Classify the protein with examples

b) What are the various catabolic pathways in amino acid metabolism?

Q. No. 3: (20)

Write the introduction, chemistry, functions, regulations and disorders of glucagon

Q. No. 4: (10+10)

a) Describe the chemical reactions of monosaccharides

b) Describe the fate of pyruvic acid

Q.No.5: (10+10)

a) Define and classify phospholipids

b) Describe the biosynthesis of fatty acids

Q.No.6: (10+10)

a) Describe the electron transport chain

b) What are the applications of biotechnology?

Q.No.7: (10+10)

Write a note on following

a) Vitamin C

b) Porphyrins

UNIVERSITY OF THE PUNJAB

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q 1	a)	Define Pharmacy profession; Describe the role of Muslim Scientists in the field of Pharmacy.	10 marks
	b)	Write a note on i) Industrial Pharmacy. ii) Hospital Pharmacy	5 marks each
Q 2	a)	Define colloids; Explain briefly optical and kinetic properties of colloids.	10marks
	b)	Define suspension, describe flocculated system in detail..	10 Marks
Q 3	a)	What are colligative properties of a solution? Discuss the application of osmotic pressure and osmolarity in Pharmacy.	10 marks
	b)	Define solubility, differentiate between kinetic and equilibrium solubility. How will you determine the solubility of a solid in liquid solvent?	10 Marks
Q 4	a)	Define crystalline and amorphous system. What is crystalline phase; explain with reference to lattice parameter and crystal symmetry.	10 Marks
	b)	Differentiate between crystallization and precipitation. Write down common steps of crystallization process.	10 Marks
Q 5	a)	Define hydrolysis; describe its various types with relevant examples.	10 Marks
	b)	Define extraction, Name its various types. Discuss the principal of continuous extraction.	10 Marks
Q 6		Write a note on following terms a. Simple and Fraction distillation b. Deliquescence and Efflorescence c. Triple point and Lyophilization d. Types of adsorption isotherms	5 marks each
Q 7	a)	What is rheology? Discuss the flow characteristics of Non-Newtonian systems.	10 Marks
	b)	Define & classify the drug stability. Discuss in detail Physical degradation & its preventive measures.	10 Marks

UNIVERSITY OF THE PUNJAB

First Prof. A/2017

Examination:- Doctor of Pharmacy (Pharm.D.)

Subject: Physiology & Histology / Physiology

PAPER: 4 (Old & New Course)

TIME ALLOWED: 3 hrs.

MAX. MARKS: 100

NOTE: *Attempt any FIVE questions. All questions carry equal marks.*

Q.No.		Marks
1	What are red blood cells (RBCs)? Explain the production, functions and fate of RBCs.	20
2	A) What are neuroglia and their different types?	10
	B) Discuss the composition and functions of Cerebrospinal fluid.	10
3	A) Discuss the secretions from gastric glands and write down the basic mechanism of secretion of hydrochloric acid?	12
	B) Explain the defecation reflexes.	08
4	Describe the divisions of the autonomic nervous system? State the functions of parasympathetic nervous system on different organs.	20
5	A) Discuss the physiological and metabolic functions of insulin and glucagon.	12
	B) Discuss the physiological functions of glucocorticoids.	08
6	A) Discuss the properties of respiratory membrane and diffusion of gases through respiratory membrane.	12
	B) Name pulmonary volumes and discuss the significance of each volume.	08
7	A) How the cardiac muscles are different from skeletal muscles? Discuss in detail the properties of cardiac muscles.	10
	B) Discuss in detail the mechanism of contraction of cardiac muscle.	10

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.1 Write a detailed note on cranial nerves. Mentioning sequence, types and origin of cranial nerve.　　　　10

Q.2 (a) Draw and label regions of abdomen　　　　05

(b) Write a note on general and topographical anatomy of pituitary gland　05

Q.3 (a) Explain anatomy of Biliary canaliculi system　　　　05

(b) Explain types of bones.　　　　05

Q.4 Draw and label diagram of coronary circulation　　　　10

Q.5(a) Enumerate functions of kidney　　　　05

(b) Write a note on sweat glands with diagram　　　　05

Q.6 (a) Enumerate the layers of the skin　　　　05

(b) Name the parts of Male Reproductive System　　　　05

Q.7 (a) Write a note on Mitochondria with diagram　　　　05

(b) Write a note on dermis of skin with diagram　　　　05

UNIVERSITY OF THE PUNJAB

First Prof. A/2017

Examination:- Doctor of Pharmacy (Pharm.D.)

Roll No. ....

Subject: English Compulsory

PAPER: 6 (New Course)

TIME ALLOWED: 3 hrs.

MAX. MARKS: 100

NOTE: *Attempt all the given questions.*

Q.1 Read the following passage and answers the questions. (15)

Persuasion is the art of convincing someone to agree with your point of view. According to the ancient Greek philosopher Aristotle, there are three basic tools of persuasion: ethos, pathos, and logos. Ethos is a speaker's way of convincing the audience that she is a credible source. An audience will consider a speaker credible if she seems trustworthy, reliable, and sincere. This can be done in many ways. For example, a speaker can develop ethos by explaining how much experience or education she has in the field. After all, you would be more likely to listen to advice about how to take care of your teeth from a dentist than a firefighter. A speaker can also create ethos by convincing the audience that she is a good person who has their best interests at heart. If an audience cannot trust you, you will not be able to persuade them. Pathos is a speaker's way of connecting with an audience's emotions. For example, a speaker who is trying to convince an audience to vote for him might say that he alone can save the country from a terrible war. These words are intended to fill the audience with fear, thus making them want to vote for him. Similarly, a charity organization that helps animals might show an audience pictures of injured dogs and cats. These images are intended to fill the viewers with pity. If the audience feels bad for the animals, they will be more likely to donate money. Logos is the use of facts, information, statistics, or other evidence to make your argument more convincing. An audience will be more likely to believe you if you have data to back up your claims. For example, a commercial for soap might tell you that laboratory tests have shown that their soap kills all 7,000,000 of the bacteria living on your hands right now. This piece of information might make you more likely to buy their brand of soap. Presenting this evidence is much more convincing than simply saying "our soap is the best!" Use of logos can also increase a speaker's ethos; the more facts a speaker includes in his argument, the more likely you are to think that he is educated and trustworthy. Although ethos, pathos, and logos all have their strengths, they are often most effective when they are used together. Indeed, most speakers use a combination of ethos, pathos, and logos to persuade their audiences. The next time you listen to a speech, watch a commercial, or listen to a friend try to convince you to lend him some money, be on the lookout for these ancient Greek tools of persuasion.

1) As used in paragraph 2, what is the best antonym for credible?

A. unintelligent

B. boring

C. dishonest

D. amazing

2) Amy is trying to convince her mother to buy her a pair of $200 shoes. She says: "Mom, the shoes I have are really old and ugly. If I don't get these new shoes, everyone at school is going to laugh at me. I will be so embarrassed that I will want to die." What form of persuasion is Amy using here?

A. pathos

B. ethos

C. logos

D. a combination of ethos, pathos, and logos

3) According to the passage, logos can build ethos because

A. an audience is more easily convinced by facts and information than simple appeals to emotions like pity or fear

B. an audience is more likely to trust a speaker who uses evidence to support his argument

C. a speaker who overuses pathos might make an audience too emotional; audiences who are too frightened or too sad are unlikely to be persuaded

D. a speaker can use misleading or false information to make his argument seem more convincing

P.T.O.

4) Gareth is running for mayor. He tells his audience: "Under our current mayor, there have been 15,000 new cases of unemployment. If he stays in office, who knows how many more people will lose their jobs? The number could go up even higher. When I was the CEO of Magnatech, I helped to create over 1,000 new jobs. I can do the same thing for this city if you vote for me." Which form of persuasion is Gareth using here?

I. pathos

II. logos

III. Ethos

A. I only

B. I and II only

C. II and III only

D. I, II, and III

5) According to the passage, the most effective tool of persuasion is

A. ethos, because you cannot persuade an audience that does not trust you

B. logos, because it can also be used to build ethos

C. a combination of ethos, pathos, and logos

D. pathos, because human beings are most easily persuaded by emotion

Q2.Write an essay on the following topic. **(15)**

A) The ideal student   B) The importance of scientific research

Q3. Write a paragraph on the given topic. **(10)**

Parents

Q4.Write a letter on the given topic. **(10)**

Write a letter to friend and describe him an accident you have recently seen.

Q5. Write a comprehensive not on speed reading? **(10)**

Q6. Prepare sample of CV. **(10)**

Q7. Apply scanning on the given text and extract the required information. (10)

Kibor		
Following were the Karachi inter-bank offered rates on Tuesday		
	Bid	**Offer**
1-week	8.48	9.48
2-week	8.77	9.27
1-month	9.52	10.02
6-month	9.88	10.38
9-month	10.12	10.62
1-year	10.36	10.86
2-year	10.62	11.12
3-year	10.87	11.37

1. On which day the rates were offered?

2. Which city the inter-bank rates belong to?

3. What was the 9-month bid?

4. What was the offer for 2-year?

5. Write bid and offer for 6-month?

Q8. Inference can be seen in real life, how, relate this concept with your understanding of inference?

(10)

Q9. Write a dialogue on the given situation.

(10)

A) Dialogue between a student and police sergeant on one-wheeling

B) Dialogue between two women about doing something

UNIVERSITY OF THE PUNJAB

Second Prof: A/2017

Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutics-II (Pharmaceutical Preparations)
Pharmaceutics-II (Dosage Forms Science)
PAPER: 1 (Old & New Course)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.1(a) Write a note on ophthamic preparation in detail (10)

(b) Define the injections. Give the detail of official types of injections. (10)

Q.2 (a) Define Aerosol disperse system? Briefly explain the types and components of aerosol system? (10)

(b) Briefly discuss oral hygiene products (10)

Q.3 Write a note on following (05 each)

(a) Preparation of Elixirs

(b) Gels

(c) Enemas & Douches

(d) Alcohol USP

Q.4 (a) What are the parenterals. Discuss in detail the added substances used in parenterals alongwith examples. (10)

(b) Classify the suppository bases. Discuss in detail water soluble suppository (10)

Q.5 (a) Define the emulsions. Discuss their methods of preparations? (12)

(b) Discuss the design features of Transdermal Drug delivery Systems. (08)

Q.6 (a) Define the extraction and discuss galenical preparation in detail. (15)
(b) Write a note on Non aqueous vehicles for injection. (05)

Q.7 (a) Define the suppositories. Discuss their different therapeutic applications and advantages in Pharmacy. (10)

(b) Define granule. Discuss their type, advantages and disadvantages (10)

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NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q. 1 What is biotransformation of drug. Discuss Phase I and Phase II reactions with examples.   20

Q. 2 Classify Parasympathomimetics. Give mechanism of action, therapeutic uses and toxicity of Physostigmine.   20

Q. 3 Classify receptors. Give detailed account of Ligand-gated ion channels.   20

Q. 4 (a) Define emesis. Give the mechanism of action and therapeutic uses of antiemetic drugs.   10

(b) Write down the pharmacology of proton pump inhibitors.   10

Q. 5 Classify anti-asthmatic drugs. Give the pharmacology of leukotriene receptor antagonists. 20

Q. 6 Classify Sympathomimetics. Give the pharmacology of Epinephrine.   20

Q. 7 (a) Describe the mechanism of action and therapeutic uses of Amiodarone.   10

(b) Discuss the pharmacology of Captopril.   10

UNIVERSITY OF THE PUNJAB

Subject: Pharmacognosy-I
PAPER: 3 (Old & New Course)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q-No.1.

(A) Define the following terms

i)   Iodine value

ii) Infestant allergen

iii) Biologics

iv) Substitution

(B) What are enzymes? Write their properties and discuss lock and key model? (10+10)

Q-No.2

(A) Define Allergy and allergens? Discuss in detail inhalant allergens? (10+10)

(B) Discuss the Unani and Homeopathic system of medicine?

Q-No.3

(A) Write down a brief note on ethylene? (10 +10)

(B) Discuss in detail the preservation of crude drugs against deterioration?

Q-No.4

(A) What are Proteolytic enzymes? Discuss in detail pepsin also give method of preparation?

(B) Write down a brief note on Gibberellins? (10+10)

Q-No.5

(A) Define and classify pesticides? (04+16)

(B) What you know about honey, gelatin, spermaceti and cod liver oil.?

Q-No.6.

Describe in details about the crude drugs belong to Ranunculacae and papaveraceae family? (20)

Q-No.7.

Explain the organoleptic evaluation with reference to the characteristic of leaf? (20)

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Subject: Pharmaceutical Microbiology
Pharmaceutics-III (Pharmaceutical Microbiology &
Immunology

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

PAPER: 4 (Old & New Course)

Attempt any FIVE questions. Question No 1 is compulsory. Illustrate your answer with Diagrams and Examples where necessary. All questions carry equal marks.

05

Q. No. 1   Define the following terms:

(A)
1. Sterilization
2. Disinfection
3. Antiseptic
4. Germicide
5. Fermentation

08

(B)   Multiple Choice Questions (MCQs)

1   Iodine used in Gram's staining serves as
   a) Catalyst
   b) Cofactor
   c) Mordant

2   Surface appendage of bacteria meant for cell-cell attachment during conjugation is
   a) Pilli
   b) Flagella
   c) Cilia

3   The circulation of two month old breast-fed baby will contain maternal
   a) Ig A
   b) Ig E
   c) Ig G

4   Which type of hypersensitivity cannot be transferred with serum antibody
   a) Type I
   b) Type III
   c) Type IV

5   BCG vaccine is used to protect against
   a) Influenza
   b) Rabies
   c) Tuberculosis

6   Primary immunodeficiency producing susceptibility to infection by virus & molds is due to the deficiency of
   a) B cells
   b) T cells
   c) Phagocytes

7   Temperature in Pasteurization is
   a) 62.8°C
   b) 68.2°C
   c) 60.8°C

P.T.O.

8   Separation of a single bacterial colony is called
a) Pure Culturing
b) Isolation
c) Both

(C).   Fill in the following statements   07

1   The splitting of a parent bacterial cell to form a pair of similar size daughter cells is known as _____.

2   _____ is a measure of the growth rate of microbial population.

3   _____ is a chemical that kills or prevent infection without damaging living tissues.

4   The site of T cells maturation is _____.

5   _____ is the small chemical group on antigen molecule that reacts with antibodies.

6   _____ is involved in mediating allergic reactions.

7   T helper cell mediated hypersensitivity is _____ hypersensitivity.

Question No. 2	Classify various methods of sterilization. Give details of cold sterilization procedure.	20
Question No. 3	Write note on the following a) Industrial Hygiene b) Microbial growth	20
Question No. 4	Write a comprehensive note on non-specific resistance.	20
Question No. 5	a) Discuss the classification of bacteria in detail.	10
	b) Give the importance of soil microbiology. Explain in detail Nitrogen Cycle.	10
Question No.6	Define Serology and discuss different serological reactions.	20
Question No. 7	a) Discus what are Antigens? Define different types of antigens.	10
	b) Define immunity and discuss its types in detail	10

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USE SEPARATE ANSWER BOOK FOR EACH PART

Part I – Pakistan Studies

For this portion Time Allowed is 1 hr. and Max. Marks 40.
Attempt any TWO questions. All questions carry equal marks.

Note: The candidate who attempt their question keeping in view Allama Iqbal's Poetry
will be given special weightage . Attempt any TWO question . All question
carry equal mark.

Q.1 Highlight the socio-religious services rendered by Hazrat Shah Wali Ullah (R.A) .

سوال نمبر۱) حضرت شاہ ولی اللہ کی دینی وسماجی خدمات پر روشنی ڈالیں۔

Q.2 Narrate the role the Muslim League in the freedom movement.

سوال نمبر۲) تحریکِ آزادی میں مسلم لیگ کے کردار کا جائزہ لیں۔

Q.3 Evaluate the significance of the Object Resolution, 1949 in the history of
constitution making.

سوال نمبر۳) آئین سازی کی تاریخ میں قرارداد مقاصد ۱۹۴۹ء کی اہمیت واضح کریں۔

Q.4 What measures are essential for resolving the economic problems faced by our
country?

سوال نمبر۴) وطنِ عزیز کو درپیش معاشی مسائل حل کرنے کے لئے کیا اقدامات ضروری ہیں؟

Part II– Islamiyat

For this portion Time Allowed is 2 hrs. and Max. Marks 60.
Attempt the following questions. Q. No.5 is compulsory.

Q. No.1   Translate and explain Two of the following Quranic Verses: (20)

درج ذیل میں سے دو آیات کا ترجمہ و تشریح کیجیے۔

الف: الَّذِيْنَ يُؤْمِنُوْنَ بِالْغَيْبِ وَيُقِيْمُوْنَ الصَّلٰوةَ وَمِمَّا رَزَقْنٰهُمْ يُنْفِقُوْنَ ۝

ب ـ اِنَّ اللّٰهَ يُحِبُّ الْمُقْسِطِيْنَ ۝

ج ـ اِنَّ اللّٰهَ عَلٰى كُلِّ شَيْءٍ قَدِيْرٌ ۝

د ـ وَاللّٰهُ لَا يَهْدِى الْقَوْمَ الظّٰلِمِيْنَ ۝

Q. No.2   Translate and explain One of the following Ahadith.   (10)

مندرجہ ذیل میں سے کسی ایک حدیث کا ترجمہ و تشریح کیجیے۔

الف تَرَكْتُ فِيْكُمْ أَمْرَيْنِ لَنْ تَضِلُّوْا مَا تَمَسَّكْتُمْ بِهِمَا كِتَابَ اللّٰهِ وَسُنَّةَ رَسُوْلِهِ ـ

ب كُلُّ كَسْبِ الْحَلَالِ وُلَيِّنَة بَعْدَ الْفَرِيْضَةِ ـ   (P.T.O.)

Q. No.3   Highlight the significance of the study seerat, splendid character of the Holy   (10)
           Prophet(S.A.W.).   **OR**
           Narate the cardinal features of the Treaty of Medina.

سوال نمبر ۳   سیرت طیبہ کے مطالعے کی اہمیت پر روشنی ڈالیے۔ **یا**

 میثاق مدینہ کے اہم نکات کا جائزہ لیجیے۔

Q. No.4   Give an appraisal of the academic impact of Islamic civilization.   (10)
                                OR
           Assess the consequences of the clash of civilizations critically.

سوال نمبر ۴   اسلامی تہذیب کے علمی اثرات بیان کیجیے۔ **یا**

تہذیبی تصادم کے نتائج کا تنقیدی جائزہ لیجیے۔

Q. No.5   Write short answers to the following:
           a. Which event has been called a peaceful revolution?
           b. Mention the Quranic name of Makkah.
           c. What is duration of Pious Caliphate?
           d. What is the number of Haroof-e-Muqattaat?
           e. Upon whom was title Zunnurain bestoward.

سوال نمبر ۵: درج ذیل سوالات کے مختصر جواب دیجیے:

الف: کس واقع کو پر امن انقلاب کہا گیا ہے۔

ب: قرآن کریم میں مکہ کو کس نام سے پکارا گیا ہے۔

ج: خلافت راشدہ کا دورانیہ کیا تھا۔

د: حروف مقطعات کی تعداد کیا ہے۔

ر: ذوالنورین کا لقب کس شخصیت کو عطا کیا گیا تھا۔

Ethics (For Non-muslim Candidates)   (*MARKS: 60*)

Note: Attempt any THREE questions. All questions carry equal marks.

Q. No.1   How far are Ethics and religion Co-related?

Q. No.2   "Islam advocates the causes of humnitarin" Comment.

Q. No.3   Why has lying been condemend and prohibited.

Q. No.4   Define Ethics and discuss its scope and utility.

Q. No.5   Summarise the moral teachings of Buddism.

Q. No.6   Do you agree with the view that simplicity carries great value in human life.

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Note: Attempt FIVE questions in all, selecting THREE questions from Section I and TWO from section II. Use of Scientific Calculators and Statistical Tables are allowed. Graph paper may be supplied on demand.

SECTION – I

Q.1 a) Define the following: (10, 10)
   (i)   Biostatistics
   (ii)   Bivariate data
   (iii) Descriptive statistics
   (iv)   Chronological data
   (v)   Primary data

   b) Marks obtained by a student in different subjects are as follows.

Subject	Marks
Zoology	45
Botany	48
Physics	47
Chemistry	40

   Make a Pie-Chart.

Q.2 a) Describe the properties of coefficient of correlation.   (8, 12)
   b) Find the coefficient of correlation between BP and Age.

Age (x)	20	25	29	35	40	46	50
BP (Y)	82	87	90	80	100	97	101

Q.3 a) A certain type of storage battery lasts on the average 3.5 years with a standard   (10, 10)
   deviation of 0.8 years. Assuming that the battery lives are normally distributed, find
   the probability that a given battery will last less than 2.5 years.
   b) The incidence of occupational disease in an industry is such that workmen have a
   30% chance of suffering from it. What is the probability that out of 6 workmen, 4 or
   more will catch the disease?

Q.4 a) Discuss the application of chi-square distribution.   (8, 12)
   b) A group of 10 children are found to have the following intelligence quotients: 125,
   113, 116, 131, 112, 123, 108, 113, 132 and 128. Is it reasonable to suppose that
   these children have come from a large population whose average IQ is 115.

Q.5 a) Describe the least significance difference test.   (8, 12)
   b) The analysis of variance of RCB design produced the following results.

S.O.V.	D.F.	S.S.	M.S.	F-ratio
Treatment	3	28.2	=	=
Block	5	=	13.80	=
Error	=	34.1	=	

   (i)   Complete the ANOVA table.
   (ii) Do the data provide sufficient evidence to indicate a difference among the
         treatment means? Test using $\alpha = 0.01$.

Q.6 a) Define mean, median and mode. What is empirical relation between them?   (8, 12)
   b) We are given the following frequency distribution for the weights of pieces of luggage

Weight (Kg)	7 – 9	10 – 12	13 – 15	16 – 18	19 – 21
No. of pieces:	02	08	14	19	07

   P.T.O.

   Compute Co-efficient of variation.

SECTION-II

Q.7. a) Solve the equation (6)

$$x^{\frac{2}{5}} + 8 = 6x^{\frac{1}{5}}$$

b) If 5th term of an A.P. is 13 and 17th term is 49 then find the general term a_n. (7)

c) Find the value of n when $^nP_2 = 30$. (7)

Q.8. a) Prove the identity: (6)

$$\cos^2\theta - \sin^2\theta = \frac{1-\tan^2\theta}{1+\tan^2\theta}$$

b) Show that the points A (5, 2), B (-2, 3), C (-3, -4) and D (4, -5) are vertices of parallelogram. (7)

c) Find the Centre and radius of the circle whose equation is $x^2 + y^2 - 6x + 4y + 13 = 0$ (7)

Q.9. a) Evaluate (6)

$$\lim_{x \to 0} \frac{1-\cos x}{\sin^2 x}$$

b) Find $f'(x)$ when $f(x) = \sin e^{3X} \ln(2x^2 - 3)$ (7)

c) Use the rule of integration by parts to find (7)

$$\int x \cos x \, dx$$

UNIVERSITY OF THE PUNJAB

Third Prof: Annual - 2017
Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pathology (Old & New Course)
PAPER: 1

TIME ALLOWED: 3 hrs.
MAX. MARKS: 50

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Question no 1:

What is cellular adaptation? Briefly describe its different types.   (10)

Question no 2:

What is granulomatous inflammation? Briefly describe and draw granuloma   (10)

Question no 3:

    a) Write down the complication of secondary wound healing ?   (5)
    b) Explain factors that affect wound healing.   (5)

Question no 4:

What is thrombosis? What are different types of thrombus ? Briefly describe   (10)

Question no 5

    a) Briefly describe immediate hypersensitivity reaction (Type I)?   (6)
    b) Draw and label structure of antibody   (4)

Question no 6

    a. Write down differences between benign and malignant tumor   (5)
    b. Nomenclature of malignant tumor? Give examples   (5)

Question no 7

    Write short notes on

        a) Dystrophic calcification   (4)
        b) Exogenous pigmentation   (3)
        c) Irreversible cell injury   (3)

UNIVERSITY OF THE PUNJAB

Subject: **Pharmacology & Therapeutics-II (Old & New Course)**   **TIME ALLOWED: 3 hrs.**
PAPER: 2   **MAX. MARKS: 100**

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q1.   a) Classify antifungal drugs.   (10)

      b) Discuss the mechanism of action and adverse effects of Azoles.   (10)

Q2.   Describe the life cycle of Plasmodium and discuss the mechanism of action,
      pharmacokinetic and antimalarial spectrum of Artemesinin.   (20)

Q3.   a) What are the different classes of natural compounds used as cytotoxic agents? (10)

      b) Discuss the mechanism of action and adverse effects of Vinca alkaloids.   (10)

Q4.   Discuss the mechanism of action and resistance of Penicillins.   (20)

Q5.   Describe different types of epileptic seizures. Write down the mechanism of action,
      pharmacokinetic, clinical uses and adverse effects of phenytoin.   (20)

Q6.   Classify antiviral drugs. Discuss the mechanism of action and therapeutic uses of
      amantatine   (20)

Q7.   a) Discuss the treatmet strategies of Acetaminophen-induced tocxicities.   (10)

      b) Discuss the pharmacology of levodopa.   (10)

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Subject: Pharmacognosy-II (Old Course)
Pharmacognosy-II (Advance) (New Course)
PAPER: 3

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q-No.1. (A) What are glycosides and discuss crude drugs containing anthraquinone glycosides. 20

Q-No.2. Define volatile oils? Discuss in detail about the chemistry of volatile oil? 20

Q-No.3. What are alkaloids, how they can be classified.. Discuss crude drugs containing alkaloidal amines. 20

Q-No.4. (A) Define tannins and give chemical classification of tannins? 10+10
(B) Discuss shortly
  i)   Asafoetida
  ii) Hammamelis

Q-No.5. Describe partition chromatography, explain paper chromatography. 20

Q-No.6. Give the botanical origin, family, constituents and uses of following crude drugs. 20
  i.   Rosin   iii. White squill
  ii. Honey   iv. Cinchona

Q-No.7. Give the structural formulae of the followings. 20
  i.   Atropine   iii. Physiostigmine
  ii. Codeine   iv. Hyoscyamine

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Third Prof: Annual - 2017
Examination: Doctor of Pharmacy (Pharm.D.)

Roll No. ....

Subject: Pharmaceutics-III (Disp. & Comm., Pharmacy) (Old Course)
Pharmacy Practice-II (Disp. Comm., School Admn Pharmacy) (New Course)

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

PAPER: 4

NOTE: Attempt FIVE questions. Select Two from first part and Three from second part. All questions carry equal marks.

PART-I (Dispensing)

Q.1. (a) Discuss handling of Prescriptions in detail? (12)
  (b) Discuss containers and closures used for semisolid dispensed products? (08)

Q.2. (a) Define Pharmaceutical incompatibilities. Discuss Therapeutic Incompatibilities in detail? (12)
  (b) Discuss containers and closures used for liquid dispensed products? (08)

Q.3. (a) Define and classify powders. Discuss various techniques of preparing extemporaneous powders. (12)
  (b) How you will dispense Eutectic mixtures and deliquescent powders? (08)

PART-II (Community, Social &Administrative Pharmacy)

Q.4. a) Describes types of pharmacoeconomic analysis methods and provide detailed description of Cost-minimization analysis and cost-utility analysis with examples. (12)

b) Please provide education and counseling points for diabetes patients switched to insulin therapy. (08)

Q.5. a) Write a detailed note with pertinent examples of cost-benefit analysis and cost-effective analysis. (10)

b) What are the DO's and DONT's of Warfarin therapy with regards to counseling. (10)

Q.6. a) Should Disprin be dispensed without supervision of community pharmacist? If not than what are complications associated with Disprin? (10)

b) Briefly discuss the epidemiology under the umbrella of MDGs & SDGs. (10)

Q.7. a) What is EPI? Discuss vaccines used under EPI schedule. (10)

b) Briefly discuss preventive health by taking few examples. (10)

UNIVERSITY OF THE PUNJAB

Roll No. ....

Third Prof: Annual - 2017
Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutical Chemistry-II (Instrumentation) (Old Course)   TIME ALLOWED: 20 min.
Pharmaceutical Chemistry-III (Pharmaceutical Analysis) (New Course)   MAX. MARKS: 20

PAPER: 5

Attempt this paper on this question sheet only

Note: This paper comprises of two parts, Part-1 (MCQs) and part-2 (descriptive). Part-1 is compulsory, whereas attempt any 4 questions from part-2. Each question carries equal marks. Part-1 Multiple Choice Questions (MCQs). Please encircle the correct statement, each MCQ carries 2 marks, total marks 20.

No. of question	Question	Marks

Q.1	1- Which of the following is correct statement?
	    a. Resolution is proportional to the square root of the number of theoretical plates in a column
	    b. Resolution is inverse proportional to the square root of the number of theoretical plates in a column
	    c. Resolution is proportional to the square of the number of theoretical plates in a column
	    d. Resolution is proportional to the number of theoretical plates in a column
	 2- What useful information can be found from a Van Deemter plot?
	    a. The selectivity factor
	    b. Optimum mobile phase flow rate
	    c. Optimum column temperature
	    d. The capacity factor
	 3- Sieving is the mechanism of separation in
	    a. Cause exclusion chromatography
	    b. CEC
	    c. Size fractional chromatography (SFC)
	    d. Size exclusion chromatography (SEC)
	    e. Internal exclusion fractional chromatography (IEFC)
	 4- Retention factor, k', describes
	    a. The distribution of an analyte between the stationary and the mobile phase
	    b. The migration rate of an analyte through a column
	    c. The velocity of the mobile phase
	    d. a and c
	 5- Which of the following techniques does *not* use the mass spectrometer as a detector?
	    a. Gas chromatography
	    b. High performance liquid chromatography
	    c. Nuclear magnetic resonance spectroscopy
	    d. Atomic absorption spectroscopy
		20

PTO

6-Which of the following techniques is least useful for structural determination of small organic compounds?
   a. UV spectroscopy
   b. NMR
   c. GC-MS
   d. FT-IR

7- In general the lamp used in variable wavelength detector for UV in HPLC is which of the following?
   a. Deuterium
   b. Tungsten
   c. Carbon arc
   d. Xenon

8- UV-Vis. Spectroscopy of organic compounds is usually concerned with which electronic transition(s)?
   a. $\sigma \rightarrow \sigma^*$
   b. $n \rightarrow \pi^*$
   c. $n \rightarrow \pi^*$ and $\pi \rightarrow \pi^*$
   d. a and b

9- Which of the following wavelength ranges is associated with UV spectroscopy?
   a. 0.8 - 500μm
   b. 400 - 100nm
   c. 380 - 750nm
   d. 0.01 - 10nm

10- The electrolyte solution within the glass electrode (ref) of the pH meter is:
   a. Saturated KCl
   b. Concentrated HCl
   c. Dilute KCl
   d. Dilute HCl

UNIVERSITY OF THE PUNJAB

Third Prof: Annual - 2017
Examination: Doctor of Pharmacy (Pharm.D.)

Roll No. ....

TIME ALLOWED: 2 hrs. & 40 min.
MAX. MARKS: 80

Attempt this Paper on Separate Answer Sheet provided.

__Part-II:__ __Attempt any 4 questions. Each questions carry equal marks.__

No. of question	Question	Marks
Q.1	a- Describe chromatographic development. (10 marks) b- Describe adsorption isotherms and their role in peak shape. (5 marks) c- Describe electronic transitions in UV/Visible spectroscopy (5 marks)	20
Q.2	a- Describe the construction and working of loop injector in HPLC. (5 marks) b- Describe the Jabalonski Diagram (5 marks) c- Describe the relationship of Retardation factor (Rf) and partition coefficient (5 marks) d- Describe properties, preparation and applications of Silver Nitrate (5 marks)	20
Q.3	a- Differentiate between accuracy and precision (5 marks) b- How LOD and LOQ is determined? (5 marks) c- Describe factors described in the Rate Theory of chromatography (10 marks)	20
Q-4	a- What are the basic types of a DSC instrument and describe different phase transitions occurring in a polymer in DSC analysis. (10 marks) b- Define chemical shift, delta scale, internal standard, role of ½ spin in NMR and N+1 rule in spin-spin splitting. (10 marks)	20
Q.5	a- Write down the different methods for ion production in mass spectrometry. (10 marks) b- Write down the principle and applications of Atomic Absorption Spectrometry. (5 marks) c- Write down the vibrational modes and applications of IR (5 marks)	20
Q.6	a- What is electrode potential and how it can be determined with Nernst Equation? (10 marks) b- Describe non-aqueous titrations and their applications (10 marks)	20

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Instructions:
- Solve entire paper (both Objective and Subjective Parts) on Answer Book.
- In case of MCQs, write the Correct Option only, cutting / overwriting is not allowed.
- There is no choice among questions, you have to attempt all questions.
- Read the Questions carefully before attempting.
- No lead pencils, only BLUE or BLACK ink is allowed to solve the paper.

"BEST OF LUCK"

Determine the correct option for each of the following questions. Write the **Question Number** and your selected option like **(A, B, C or D)** in **CAPITAL** letters on the **Answer Book** only in a clear manner. You do not need to write the question statement on the Answer Book.

Q.1. A byte can store
  A. Alphabet
  B. Special Character
  C. Space
  D. All of Above

Q.2. A byte consists of
  A. 4 bits
  B. 8 bits
  C. 12 bits
  D. 16 bits

Q.3. _____ is the processed and organized data presented in a meaning form.
  A. Data
  B. Information
  C. Byte
  D. None of Above

Q.4. Hardware refers to
  A. Collection of Programs
  B. Electronic and Electromagnetic Devices
  C. Data of Information
  D. Any Collection of Data

Q.5. Which of the followings is a Primary Storage Device?
  A. Hard Disk
  B. RAM
  C. Flash USB Drive
  D. CPU

Q.6. Software is the _____ part that tells the computer how to do its job.

A. Tangible
B. Non-Tangible
C. Invisible
D. None of Above

Q.7. _____ contains the pre-programmed computer instructions such as the Basic Input Output System (BIOS).

A. RAM
B. ROM
C. CPU
D. Registers

Q.8. Which of the following is generally called "The brain of the Computer".

A. Memory
B. Central Processing Unit
C. Hard Disk
D. Registers

Q.9. If we decrease the size of RAM, then system will increase the usage of _____.

A. ROM
B. Virtual Memory
C. Cache Memory
D. Registers

Q.10. Cache Memory exist in

A. ROM
B. Hard Disk
C. Central Processing Unit
D. Registers

Q.11. Which of the following is an example of input device.

A. Audio Speakers
B. Touch Screen LED Monitor
C. Printer
D. None of Above

Q.12. Which Printer is an expensive one and better then from other printers in performance?

A. Dot-Matrix Printer
B. Laser Printer
C. Ink-Jet Printer
D. Thermal Printer

Q.13. CD-ROM stands for

A. Compactable Read Only Memory
B. Compact Data Read Only Memory
C. Compact Disk Read Only Memory
D. Compactable Disk Read Only Memory

Q.14. _____ perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

A. Application Software
B. Messaging Software
C. Operating System
D. Management Information System

Q.15. Operating System is an example of _____.

A. Application Software
B. Banking System
C. System Software
D. Management Information System

Q.16. System Restore Utility can enable us to restore

A. drives data where OS is not installed
B. your personal files
C. system state
D. option a & b both

Q.17. Pictures/Images may have the following file extensions.

A. exe, doc, pdf
B. dll, lib, ppt
C. bmp, gif, jpg
D. txt, zip

Q.18. The physical arrangement in a computer that contains the computer's basic circuitry and components is called.

A. Processor
B. Hard Disk
C. Motherboard
D. RAM

Q.19. What is LINUX?

A. Malware
B. Operating System
C. Application Program
D. Firmware

Q.20. The main role of data de-fragmentation is to

A. Secure your data from viruses
B. Stop unauthorized use of data
C. Increase the data access speed
D. None of the Above

What is Data Processing and Data Processing Cycle, and describe the difference between Batch Processing and Real-Time Processing.

Define the following terms briefly.
   a. ROM & RAM
   b. Computer Viruses & Anti-Viruses
   c. Name any five software applications for data analysis

a) What are the functions of computer systems in hospital pharmacy?
b) Write a detailed note on computer-aided drug utilization review.

Highlights the software tools, which can help pharmacist to impart clinical and managerial services at community pharmacy.

You have established a small office and you have to purchase a computer for this office. Please list down the specifications of the following devices that will fulfill your needs as a small office user.

   a. Processor
   b. Memory
   c. Input Devices
   d. Storage Devices
   e. Communication Devices

UNIVERSITY OF THE PUNJAB

Fourth Prof: A/2017

Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutics-IV (Hospital Pharmacy)   **TIME ALLOWED: 3 hrs.**

PAPER: 1   **MAX. MARKS: 100**

Note: Attempt any FIVE questions. All questions carry equal marks.

Q 1) Write down the Generic name, company name, Dosage form, Strengths, indications, contra indication and Drug-Drug interactions of the following drugs: (20)

I.	Leflox	V.	Tegral	IX.	Somogel
II.	Timorex	VI.	Xanax	X.	Tagamet,
III.	Rigix	VII.	Getformin,		
IV.	Caflam	VIII.	Adalat		

Q.2 a) What is hospital pharmacy? Write a detail note on the responsibilities of a pharmacist in a hospital?   (10)

b) What are the important factors in planning of CSSR?   (10)

Q.3 a.) How the purchase of drugs can be handled only by pharmacist? Justify your answer with examples.   (10)

b) Define inventory, describe the role of Pharmacist in inventory control particular define minimum and maximum stock levels, lead time, economic order quantity   (10)

Q.4 a) Define P & TC. What is its composition?   (05)

b) Discuss the importance and functions of P & TC.   (15)

Q.5 a) Define medication errors, and their types. Describe various reasons why errors occur in hospitals?   (15)

b) Monitoring of ward stocks by Pharmacist.   (05)

Q.6. a) Discuss in detail abilities required of hospital pharmacist in a health institution.(10)

b) What is the importance of dispensing during off hours in a hospital   (10)

Q.7 a) Classify the hospitals and discuss in detail the organizational pattern of a hospital   (10)

b) Define TPN; discuss micro and macro nutrients used in TPN.   (10)

UNIVERSITY OF THE PUNJAB

Fourth Prof: A/2017

Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutics-V (Clinical Pharmacy-I)
PAPER: 2

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.N0#1: Write a note on Drug-drug interactions at pharmacodynamics levels with at least three example, and how these interactions can be harmful and beneficial in a clinical setting.(10marks)

(b) Drug-drug interactions at elimination level.(5marks)

(c) Generate a flow diagram of various study designs in clinical research.(5marks)

Q.N0#2:(a) What is a drug information? Write the resources utilized for drug information retrieval.(10marks)

(b) Describe three clinical differences among different types of Statins.(6marks)

(c) How can quinolones induce cardiovascular disease.(4marks)

Q.N0#3:(a)Classify Drug-drug interactions, Also describe, with examples, Drug-drug interactions at Absorption, and Distribution levels(15marks).

(b) Briefly, explain the major differences in procedures,from recruitment, design, sub-types and dosing, between Phase II and Phase III clinical Trails.(5marks)

Q.N0#4:(a) What is Beers criteria? Give any five examples for potentially inappropriate Medication use in older Adults.(8marks)

(b) Write the names of predisposing factors of ADRs?(4marks)

(c) Give one example for each type of ADRs?(4marks)

(d) Differentiate between hemorrhagic and ischemic stroke?(4marks)

Q.N0#5(a) What is paradoxical effect of Benzodiazepines?(6marks)

(b) Write a note on withdrawal syndrome of Benzodiazepines. Also give withdrawal protocol?(7marks)

(c) Discuss Risk based categorization of Antiepileptics? (7marks)

Q.N0#6(a) What are the predictors of Drug induced acute kidney injury?(5marks)

(b) Classify chronic kidney disease as per the kidney disease improving global outcomes guidelines? (5marks)

(c) Write a detail Note on cisplatin induced Nephropathy?(10marks)

Q.N0#7:(a)An unconscious patient is admitted in ED with high grade fever, leukocytosis, MAP 50mmHg,pulse 35/min, PCWP 2mm Hg and lactic acid 7 mmol/L. Write down diagnose and treatment protocol for this patient.(12marks)

(b) Write down any 4 ADRs in pediatrics due to altered metabolism.(4marks)

(c) Enlist the name of Drugs which can cause *torsades de pointes arrhythmia.*(4marks)s

UNIVERSITY OF THE PUNJAB

Fourth Prof: A/2017
Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutics-VI (Industrial Pharmacy)
PAPER: 3

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All Questions carry equal marks.

Question 1:

(a) - Briefly discuss the different types of hazards and their impact on the life of employees working in a Pharmaceutical manufacturing unit. - (12)

(b) - Write a detailed note on the fire hazards with reference to identification and prevention fire hazards in the pharmaceutical industry. (08)

Question 2:

Discuss in detail the aspects of Good Manufacturing Practices (GMP) and its applications for producing quality Finished pharmaceutical products (FPP) in an industry. (20)

Question.3:

(a)- Discuss the following four only (05 marks each)

1- Heat transfer

2.- Mass transfer

3- Types of dryers

4- Pin Mill

Q.4: (a) Discuss the details of manual size reduction method and write the major differences between manual and mechanical size reduction (12).

(b) Define the different terms used to explain the filtration process (08).

Q. 5. (a) Discuss the principle, working and advantages of the colloid mill, Hand mill and fluid energy mill. (12)

(b). Discuss the different methods of size reduction and with the help of examples. (08).

Q. 6 (a) - Define compression and consolidation and describe phenomenon of Angle of Repose and Flow Rates. (10)

(b) - Give the classification of various industrial dryers and discuss the details of fluidized bed dryer. (10).

Q. 7. (a) - Discuss the equipment used in the preparation of semisolid dosage forms (10)

(b) – Discuss the formulation aspects of emulsions in a Pharmaceutical industry (10)

UNIVERSITY OF THE PUNJAB

Fourth Prof: A/2017

Examination: Doctor of Pharmacy (Pharm.D.)

Subject: Pharmaceutics-VII (Biopharmaceutics)

PAPER: 4

TIME ALLOWED: 3 hrs.

MAX. MARKS: 100

***NOTE:** Attempt any FIVE questions. All Questions carry equal marks.*

Q1 a) Define the following
  i) Therapeutic alternatives
  ii) Bioequivalence
  iii) Open compartment
  iv) Mamillary model
  v) Pharmaceutical substitution **5 Marks**

 b) Describe what types of physicochemical factors are considered in dosage form design. **15 Marks**

Q2 a) Discuss how does the Noyes-Whitney equation explain factors for dissolution. **08 Marks**

 b) Describe the measurement of bioavailability using urine data. **12 Marks**

Q3 a) Describe, with illustration role of residual method in calculation of distribution rate in two compartment open model after I/V route. **12 Marks**

 b) Describe the proteins available for binding of drugs. What is the significance of protein binding?. **5+3 Marks**

Q4 a) Discuss apparent volume of distribution. Why is it called as apparent? Discuss the significance of volume of distribution. **4+2+2 Marks**

 b) Describe the calculation of parameters for one compartment open model after oral administration? **12 Marks**

Q5 a) Which are the categories of drugs given through I/V infusion? Describe the Pharmacokinetics parameters required for determination of I/V infusion? **12 Marks**

 b) Describe the factors affecting blood drug concentration during multi-dose drug administration. **08 Marks**

Q6 a) Describe non-linear pharmacokinetics **10 Marks**

 b) Describe first pass effect? Explain Phase II biotransformation reactions with at least one example. **2+8 Marks**

Q7 Write short notes on the following:
  i) Half life
  ii) Dose adjustment in renal diseases
  iii) Conditions requiring therapeutic drug monitoring **6+5+9 Marks**

UNIVERSITY OF THE PUNJAB

Fourth Prof: A/2017

Examination: Doctor of Pharmacy (Pharm.D.)

Roll No. ....

Subject: Pharmaceutics-VIII (Pharmaceutical Quality Control)

PAPER: 5

TIME ALLOWED: 3 hrs.

MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All Questions carry equal marks.

Question 1

   A. Give names of various compendial and non compendial quality control tests for tablets and capsules. Describe in detail method and apparatus of disintegration test for compressed tablets. (12)

   B. Differentiate between biological and chemical assay. Explain with examples. (5)

   C. Tabulate the acceptance criterion for dissolution test of uncoated tablets? (03)

Question 2.

   A. Name different quality control tests performed for syrups. Describe different apparatuses used for the determination of viscosity of non newtonion liquids. (10)

   B. What are IPQC testes for tablets? Describe principle, apparatus and procedure and for the friability of compressed tablets. (10)

Question 3.

   A. Define quality, why quality in needed in pharmaceutical products? Describe the concept of pharmaceutical quality management. (10)

   B. Define analysis and assay. Write down procedure for content uniformity of tablets (10)

Question 4.

   A. Name the quality control tests applied to different types of glass, Write quality control test for Type II glass. (10)

   B. What are pyrogens? Why their testing is important in pharmaceuticals? Describe in-vivo testing of pyrogens. (10)

Question 5.

   A. Write a note on any two of the followings   (5 each)

      i. Leakers test

      ii. Determination of total solids

      iii. Method of alcohol determination in gelanicals

      iv. Alkalodal drug Assay

   B. Describe method for the assay of insulin. (10)

Question 6

   A. Define Quality Control Charts. Give the classification of Quality Control Charts. (8)

   B. Describe process compatibility index. (12)

Question 7

   A. Name different test for the quality control of suppositories. Explain in detail disintegration test of suppositories. (12)

   B. What is pharmacopoeia? What type of information is given in appendices and monographs? (8)

Subject: Pharmaceutical Chemistry-III (Medicinal Chemistry)   TIME ALLOWED: 3 hrs.
PAPER: 1 .   MAX. MARKS: 100

___

NOTE: Attempt any FIVE questions, Each question carries equal marks.

Q.1:Discuss the chemistry, mechanism of action, synthesis, SAR of the followings (10+10)
    (i)   Azathioprine.   (ii)   Cyclosporine

Q. 2: Describe in detail the medicinal chemistry of the followings (10+10)
    (i)   Frusemide   (ii)   Diclofenac Sodium

Q. 3:Discuss the medicinal chemistry of the followings Anti-cancer drugs. (10+10)
    (i)   Tamoxifen   (ii)   Methotraxate

Q. 4: Discuss chemistry, SAR and mechanism of action of Chloramphenicol. (20)

Q. 5: Discuss the synyhesis,mechanism of action and SAR of the followings. (10+10)
    (i)   Isoniazid
    (ii)   Rifampicin

Q. 6: Discuss the mechanism of action, synthesis, SAR of 4,Aminoquinolines. (20)

Q. 7: Write note on the followings. (10+10)
    (i) Ferrous gluconate   (ii) Silver Sulfadiazine

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Subject: Pharmaceutics-IX (Clinical Pharmacy-II)
PAPER: 2

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q. # 1: (a) Briefly explain the followings (10)
(i) Intensity of Action of a drug (ii) Cost-utility Analysis (iii) Compensated Cirrhosis (iv) Incretin Effect (v) Hemoptysis
(b)) Formulate drug utilization evaluation criteria of Cimetidine (7 marks)
(c) Differentiate between STEMI & NSTEMI (3 marks)

Q. # 2. (a) Write a detailed note on the clinical diagnosis and principles of Multi-drug resistant TB treatment (10 marks).
(b) Explain briefly the methods involved in Pharmaco-economic evaluation (7 marks)
(c) Write names of ANY THREE Antiretroviral drugs for the treatment of AIDS (3 marks)

Q. # 3. Write a detailed note on SOAP and CORE pharmacotherapy plan. (20 marks)

Q. # 4. (a) Classify anemia based on the etiologies and red blood cells morphology (10)

(b) Write a detailed note on therapeutic drug monitoring of Digoxin (10)

Q. # 5. (a) Discuss in detail the treatment regimens for HAP (15)

(b) Briefly explain health facility indicators (5 marks)

Q. # 6. (a) What are the therapeutic options for the most common pathogens of meningitis (15 marks)

(b) Briefly explain systematic sampling with probability proportional to size (5 marks).

Q. # 7. (a) What are the managerial, educational and regulatory interventional strategies in ensuring rational use of drugs (8 marks)

(b) Write the treatment goals for acute and chronic asthma (5 marks)

(c) What is the basic concept behind essential drug list (EDL), also give brief account of essential Drug List Pakistan (7 marks).

UNIVERSITY OF THE PUNJAB

Final Prof: Annual - 2017
Examination: Doctor of Pharmacy
(Pharm.D.)

Subject: **Pharmaceutical Technology**
PAPER: 3

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.1. (a) Write down various methods for Preparation of Liposomes? (10)
   (b) Discuss soluble carriers used for Targeted Drug Delivery? (10)

Q. 2. (a) "Formulation is a system of input and output". Comment? (10)
   (b) Briefly describe the Drug Design Space? (5)
   (c) Why the one factor at a time (OFAT) approach fails to achieve optimum product? (5)

Q. 3. (a) Name various types of design considerations in drug formulation. (4)
   (b) Describe various factors affecting the formulation design? (6)
   (c) Describe advantages of microencapsulation, discuss various techniques used to prepare microcapsules? (10)

Q. 4. (a) Briefly describe Current Technologies used in Oral drug delivery system? (10)
   (b) Write a note on Biodegradable Polymers used in Pharma industry? (10)

Q. 5. (a) What are different factors involved and considered while developing parenterals? (10)
   (b) What are different techniques for the identification of pharmaceutical compounds? (10)

Q. 6. (a) Briefly discuss the concepts and principles of Gene Therapy. (10)
   (b) Discuss the applications of gene therapy in the field of Pharmacy? (10)

Q. 7. (a) Which are the pharmacokinetic features that make a drug as appropriate candidate for modified release delivery system? (8)
   (b) Discuss in-vivo/ex-vivo evaluation of modified release delivery systems? (12)

UNIVERSITY OF THE PUNJAB

Final Prof: Annual - 2017
Examination: Doctor of Pharmacy
(Pharm.D.)

Roll No. ....

Subject: Forensic Pharmacy
PAPER: 4

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

NOTE: *Attempt any FIVE questions. All questions carry equal marks.*

Q 1 Give brief answers of following terms. — 4 Marks each
  i. Counterfeit drugs
  ii. Form 6 & 7 for alternative drugs
  iii. Name the cognizable offences
  iv. Controlled delivery under Narcotic Act.
  v. Formula of price fixation for imported drugs.

Q 2 a) Describe the requirements of plant and equipment for sterile dosage forms as given in Schedule B-I under Drugs Act 1976. — 10 marks

b) Give labeling requirements for external preparations under drugs labelling and packaging rules 1986. — 10 Marks

Q 3 a) What type of drugs can be advertised under Drugs Act 1976 and rules framed thereunder? Describe the conditions to be fulfilled for advertisement of drugs. — 10 marks

b) Write down the Powers of Inspector under Drugs Act 1976. — 10 Marks

Q 4 a) Give procedure of registration of a drug for local manufacturing. — 10 Marks

b) Give types of drug manufacturing Licenses. Briefly describe the condition of drug manufacturing License. — 10 Marks

Q 5 a) Describe the procedure of PQCB in a case of over pricing of drugs referred by provincial inspector of drugs. — 10 Marks

b) Mr."X" wants to start a business of sale of drugs. Discuss the conditions according to Punjab Drugs Rules 2007 which are required to be fulfilled to get the License. — 10 Marks

Q 6 a) Discuss the following under Factory Act 1934: — 5 marks each
i) Certificate of fitness (Section 52)
ii) Restriction on the working hours of a child worker (Section 54)

b) Discuss the prohibition of practice without registration under section 31 in Pharmacy Act 1967? — 10 Marks

Q 7 a) Define the following terms as per DRAP Act 2012. — (4+4+2) Marks
  i) Health and OTC products
  ii) Medical devices
  iii) Qualification of chief executive officer (CEO)

b) Describe the procedure for change of qualified person of a Pharmacy. — 10 Marks

UNIVERSITY OF THE PUNJAB

Subject: Computer and its Applications in Pharmacy
PAPER: 6

TIME ALLOWED: 3 hrs.
MAX. MARKS: 50

Instructions:
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- There is no choice among questions, you have to attempt all questions.
- Read the Questions carefully before attempting.
- No lead pencils, only BLUE or BLACK ink is allowed to solve the paper.

"BEST OF LUCK"

Determine the correct option for each of the following questions. Write the **Question Number** and your selected option like **(A, B, C or D)** in **CAPITAL** letters on the **Answer Book** only in a clear manner. You do not need to write the question statement on the Answer Book.

Q.1. A CPU contains
   A. a card reader and a printing device
   B. an analytical engine and a control unit
   C. a control unit and an arithmetic logic unit
   D. an arithmetic logic unit and a card reader

Q.2. _____ is the processed and organized data presented in a meaning form.
   A. Data
   B. Information
   C. Byte
   D. None of Above

Q.3. Software is the _____ part that tells the computer how to do its job.
   A. Tangible
   B. Non-Tangible
   C. Invisible
   D. None of Above

Q.4. A byte can store
   A. Alphabet
   B. Special Character
   C. Space
   D. All of Above

Q.5. Hardware refers to
   A. Collection of Programs
   B. Electronic and Electromagnetic Devices
   C. Data of Information
   D. Any Collection of Data

Q.6. Which of the followings is a Primary Storage Device?
  A. Hard Disk
  B. RAM
  C. Flash USB Drive
  D. CPU

Q.7. If we increase the size of RAM, then system will reduce the usage of _____.
  A. ROM
  B. Virtual Memory
  C. Cache Memory
  D. Registers

Q.8. Which of the following is generally called "The brain of the Computer".
  A. Memory
  B. Central Processing Unit
  C. Hard Disk
  D. Registers

Q.9. Cache Memory exist in
  A. ROM
  B. Hard Disk
  C. Central Processing Unit
  D. Registers

Q.10. _____ contains the pre-programmed computer instructions such as the Basic Input Output System (BIOS).
  A. RAM
  B. ROM
  C. CPU
  D. Registers

Q.11. Which of the following is an example of input device.
  A. Audio Speakers
  B. Touch Screen LED Monitor
  C. Printer
  D. None of Above

Q.12. CD-ROM stands for
  A. Compactable Read Only Memory
  B. Compact Data Read Only Memory
  C. Compact Disk Read Only Memory
  D. Compactable Disk Read Only Memory

Q.13. A normal CD- ROM usually can store up to _____ data?
  A. 680 KB
  B. 680 Bytes
  C. 680 MB
  D. 680 GB

Q.14. _____ perform basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers.

- A. Application Software
- B. Messaging Software
- C. Operating System
- D. Management Information System

Q.15. The main role of data de-fragmentation is to

- A. Secure your data from viruses
- B. Stop unauthorized use of data
- C. Increase the data access speed
- D. None of the Above

Q.16. Which Printer is an expensive one and better then from other printers in performance?

- A. Dot-Matrix Printer
- B. Laser Printer
- C. Ink-Jet Printer
- D. Thermal Printer

Q.17. Pictures/Images may have the following file extensions.

- A. exe, doc, pdf
- B. dll, lib, ppt
- C. bmp, gif, jpg
- D. txt, zip

Q.18. The physical arrangement in a computer that contains the computer's basic circuitry and components is called.

- A. Processor
- B. Hard Disk
- C. Motherboard
- D. RAM

Q.19. What is LINUX?

- A. Malware
- B. Operating System
- C. Application Program
- D. Firmware

Q.20. Operating System is an example of_____.

- A. Application Software
- B. Banking System
- C. System Software
- D. Management Information System

What is meant by Internet? How does the internet impact on the socio-economic aspects of our lives?

Define Local Area Network (LAN) & Wide Area Network (WAN), also draw sample LAN implementation.

What is Data Processing and Data Processing Cycle, and describe the difference between Batch Processing and Real-Time Processing.

You have established an office of graphic designing and you have to purchase a computer for this office. Please list down the specifications of the following devices that will fulfill your needs as a graphic designer.

    a. Processor
    b. Memory
    c. Input Devices
    d. Storage Devices
    e. Communication Devices

Define the following terms briefly. Each term should be defined no more than six lines.

    a. ROM & RAM
    b. Computer Viruses & Anti-Viruses
    c. Name any five software applications for data analysis

UNIVERSITY OF THE PUNJAB

Annual - 2016
Examination: Doctor of Pharmacy
(Pharm.D.) One Year Condensed Course

Roll No. ....

Subject: Biostatistics
PAPER: 1

TIME ALLOWED: 3 hrs.
MAX. MARKS: 50

NOTE: Attempt any FIVE questions. All questions carries equal marks.

Q.1. Differentiate (10)

    (i)   Discrete and continuous variables
    (ii)   Independent and dependent variables
    (iii)   Primary and secondary data
    (iv)   Descriptive and Inferential statistics

Q.2. Draw a Pie Chart to represent expenditure of a family, also find arithmetic mean, median of expenditures. (10)

Item:	Food	Clothing	Housing	Fuel	Misc.
Expenditures:	1200	600	400	300	500

Q.3 a) State the properties of variance. (05)

   b) Find Co-efficient of variation for the following frequency distribution of ages. (05)

Age (years):	15 – 24	25 – 34	35 – 44	45 – 54	55 – 64
No. of Patients:	29	176	208	173	82

Q.4 a) Define the probability rules. (04)

   b) There coins are tossed. Find the probability of getting (i) at least two head (ii) at most one head. (06)

Q.5 a) A study was conducted which revealed that approximately 72% believe "Tranquilizers do not really cure anything, they just cover up the real trouble." Based on this study, what is the probability that four of the next six people selected at random will be of the opinion that tranquilizers do not really cure the problem but just cover it up? (05)

   b) Let x is normally distributed with mean 5 and standard-deviation 2. Find $P(x \le 3)$ *and* $P(x \ge 7)$ (05)

Q.6. (10)

Dose of drug:	0.3	0.4	0.6	0.8	0.9	1.0
Respond to drug:	54	59	60	65	70	72

Find a regression equation respond to drug on dose of drug and find respond when dose of drug is 0.7.

Q.7. The hemoglobin level of three groups of children fed three diets are given. Test whether the mean of these three group differ significantly, at 10% level of significance. (10)

Group I	Group II	Group III
11.6	11.2	9.8
10.3	8.9	9.7
10.0	9.2	11.5
11.5	8.8	10.8
12.1	10.7	8.9

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NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.1 Define the Bandages. How many types of bandages are used in a hospital? (10)

Q.2 Explain followings,

a) Discuss considerations of physical plant in hospital (5)

b) Discuss the basic guidelines for the I.V. admixtures preparation (5)

Q.3 Discuss budgetary control aspects for the manufacturing of bulk and sterile in hospital (10)

Q.4 Discuss clinical services provided by pharmacist in hospital settings (10)

Q.5 Discuss different methods used to sterilize the Catgut (10)

Q.6 Discuss the role of Pharmacist to control and prevention of medication errors. (10)

Q.7 Write note on

a) Responsibilities of CSSR (05)
b) Complication of TPN (05)

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NOTE: Attempt any FIVE questions. Each question carries equal marks.

1. Describe functions, characteristics and types of high performance liquid chromatography pumps (10 marks)

2. Define the following (10 marks)

   1. Partition Coefficient   2. Capacity Factor

   3. Selectivity Factor   4. Resolution

   5. Relationship of number of plates and length of the column

3. How can DSC be used to determine crystallinity? (10 marks)

4. A) Draw the schematic diagram of a gas chromatography (GC) system and describe two types of detectors of GC. (5 marks)

   B) Describe the analytical and guard columns (5 marks)

5. How Nernst Equation is used to determine concentration of an analyte? (10 marks)

6. Describe different terms used in Van Deemter Equation (10 marks)

7. Describe Standard Hydrogen Electrode (SHE) with reference to its construction and working (10 marks)

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Subject: Pharmaceutics-II (Clinical Pharmacy)   **TIME ALLOWED: 3 hrs.**

PAPER: 4   **MAX. MARKS: 100**

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.#1: (a) Briefly explain the followings   (10 Marks)

    (i) Maintenance Dose   (ii) Rabies   (iii) Types of Anemia

    (iv)Antidote of lead poisoning   (v) Antidote of Iron poisoning

(b) Describe the therapeutic Monitoring of Theophylline   (10 Marks)

Q.# 2.   What are therapeutic options for the most common pathogens of meningitis (20 Marks)

Q.#3. (a) Write a detailed note on the diagnosis and pharmaceutical management of HCV

patients   (15 Marks)

(b) Describe Prescriber related drug use indicators   (5 Marks)

Q.#4.(a) Describe diabetic emergencies and their clinical management in detail   (12 Marks)

(b) Provide a brief drug profile of any TWO of the followings   (8 Marks)

(i) Salbutamol   (ii) Nifedipine   (iii) Erythromycin

(iv)Frusemide   (v) Climetidine

Q.#5.(a) Please discuss in detail the clinical presentation, diagnosis and management of

typhoid fever   (10 Marks)

(b) Write a detail note on anti-TB drugs used for Multi-drug resistant TB patients   (10 Marks)

Q.#6. (a) Write down a comprehensive pharmaceutical care plan for a patient with un-controlled

diabetes   (15 Marks)

(b)   Name the drugs that cause Tachycardia   (5mark)

Q.#7. (a) Write a note therapeutic drug monitoring of Lithium   (15 marks)

(b) Briefly describe the stages of heart failure   (5 marks)

UNIVERSITY OF THE PUNJAB

Subject: Pharmaceutics-III (Pharmaceutical Technology)
PAPER: 5

TIME ALLOWED: 3 hrs.
MAX. MARKS: 100

***NOTE:** Attempt any FIVE questions. All questions carries equal marks.*

Q.1. Define Pre-formulation. How the fundamental physical and chemical properties of drug molecules influence the development of dosage forms

(20)

Q.2. Define microbial Assay. Discuss general principle and methods of microbial Assay.

(20)

Q.3. Discuss principles and criteria in the development of pharmaceutical Aerosols.

(20)

Q.4. a). Define Liposomes. Give advantages of liposomes as a drug carrier.

(08)

b). Classify and explain various methods of preparation of liposomes.

(12)

Q.5. Define biodegradable polymers. Explain with examples various biodegradable polymers in drug delivery systems.

(20)

Q.6. Discuss scientific and technical principles associated with the development of Modified release solid oral dosage forms

(20)

Q.7. a). Define microencapsulation. Discuss various coating materials for microencapsulation.

(10)

b). Explain various mechanisms of drug release from microsphere.

(10)

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NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q. 1 a) Define the following: 5
(i) Pharmacogenetics   (ii) Bioequivalence   (iii) Pharmacokinetics
(iv) Pharmaceutical alternatives   (v) Mamillary model

b). Explain applications of Pharmacogenetics in Pharmacy.   5

Q 2   Describe the impact of physicochemical nature of a drug on its absorption.   10

Q.3.   What are the different conditions of dissolution? How do dissolution requirements   10
meet with USP-NF specifications?

Q 4   (a) Define bioavailability. Discuss different rate limiting steps in drug bioavailability.   5

(b) What is the role of Pharmacogenetics concept in dose adjustment of drugs?   5
Briefly elaborate with the example of Warfarin or 6-Mercaptopurine.

Q.5.   Describe the applications of Pharmacokinetics in: (I) Dose individualization, (II)   10
Dose adjustment in different age groups, and (III) Obesity.

Q.6.   Describe briefly two methods for dose adjustments in renal diseases.   7
What are the general approach for dose adjusted in Hepatic impairments   3

Q.7.   (a) What are the main significance of and reasons for giving a drug by intravenous   5
infusion?

(b) Briefly describe the principle of superposition in multiple dosing.   5

UNIVERSITY OF THE PUNJAB

Annual - 2016
Examination: Doctor of Pharmacy
(Pharm.D.) One Year Condensed Course

Subject: Computer & its Applications in Pharmacy   **TIME ALLOWED: 3 hrs.**
PAPER: 7   **MAX. MARKS: 50**

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Question **(05 Marks)**

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2. Disk Defragmentation
3. Name any five software applications for data analysis

Question **(10 Marks)**

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