Day: Friday

Date: 21-11-2014

Time: 10·00 A·M·To 1·00 P·M

Max. Marks: 80

N.B.:

1) **Q. No 1 and Q. No. 5 are COMPULSORY.** Out of the remaining attempt any **TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer books.
4) Use of the non programmable Electronic pocket **CALCULATOR** is permissible.
5) The **graph papers** and the **statistical tables** will be supplied at the examination centre.

SECTION-1

Q.1   Attempt any **FIVE** of the following: (10)

a) Find the Mode and S. D. of the following:
5, 20, 18, 12, 21, 18, 26, 15.

b) Define variable.

c) What is the max. and min. value for Probability?

d) What is the max. and min. value for Correlation Coefficient?

e) For a binomial Distribution $p = 0.3$ then $q = \ldots\ldots$?

f) If two coins are tossed what is the probability that both the coins will show 'Heads'?

Q.2 a) Draw the 'Greater than' Ogive for the following data. Using the graph find the approximate value of the median.   (08)

Wt. in Kgs.	1.0 - 1.5	1.5- 2.0	2.0 - 2.5	2.5 - 3.0	3.0- 3.5	3.5 - 4.0
No. of Babies	2	6	10	12	9	4

b) Compute the Mode for the following data: (07)

No. of tablets required	4-8	8-12	12-16	16-20	20-24
No. of Patients cured	4	8	15	10	3

Q.3 a) If in a district on the average there are 2 deaths due to the snake bite in one month, find the probability that in a randomly selected month there will be 4 deaths due to the snake bite.   (08)

b) If the probability that an individual in an area is suffering from T. B. is 0.04, find the probability, using the binomial distribution that out of 5 individuals selected at random at least 2 suffer from T. B.   (07)

Q.4 a) Compute the Karl Perason's correlation coefficient for the following data: (08)

Quantity of fertilizer used	15	18	20	24	30	35	40	50
Quantity of yield	85	93	95	105	120	130	150	160

b) Compute the Spearman's Rank correlation coefficient for the following data: (07)

Doctors →	A	B	C	D	E	F
Ranks by 1ˢᵗ patient →	6	1	3	2	5	4

SECTION-II

Q.5 Attempt any **FIVE** of the following: **(10)**

   a) Define Hypothesis.
   b) Explain Type I Error.
   c) List any two non- parametric tests.
   d) Explain Randomization.
   e) Explain Population.
   f) Explain Cross over Design.

Q.6 a) Using the following data test whether the drug is effective (Use 5% Los)   **(08)**

	Drug given	Drug Not given
Patient Cured	160	100
Patient Not Cured	40	100

   b) A manufacturer claims that the mean life of his product is 13000 hrs with the S.   **(07)**
         D of 45 hrs. When 100 items were checked at random the mean life observed
         was 12970 hrs. Test whether the claims of the manufacturer are justified
         (use 5% L. O. S)

Q.7 a) Using Sign Test, test whether there is any significant difference in the pulse rate   **(08)**
         of individuals from two professions (Use 5% LOS)

Pulse Rate of Teachers	72	75	69	78	71	70	74
Pulse Rate of Drivers	76	73	73	75	74	72	75

   b) As per the theory the individuals in the blood group O, A and B are in the ratio   **(07)**
         3: 1: 2. When 1000 individuals were tested 540 were with O groups 80 with A
         groups and 380 with B group. Is the collected data consistent with the theory?
         (Use 5% LOS).

Q.8 a) Explain in details the completely randomized design, Randomized block design   **(08)**
         and Latin square design.

   b) Describe with diagram any one Statistical Control Chart.   **(07)**

*   *   *   *

Day: Monday   Time: 10·00 A·M·To 1·00
Date: 17-11-2014   Max.Marks:**80**   P·M

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each Section.
2) Answer to both the sections should be written in **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.

SECTION-I

Q.1   Answer **ANY FIVE** of the following: [10]
- a) Give the significance of Reynolds number.
- b) What is meant by impact and attrition?
- c) State Rittinger's law.
- d) Enlist equipments used for size separation.
- e) Give significance of size reduction in pharmacy.
- f) Explain principle of pitot tube.

Q.2   a) Classify flowmeters. Explain in detail principle, working and advantages of variable area flowmeters.   [08]
    b) State Fick's law of diffusion. Add an exhaustive note on theories of interphase mass transfer.   [07]

Q.3   a) Derive an expression for Bernoulli's theorem and give its applications.   [08]
    b) Derive an expression for effectiveness of screens. Add a note on factors affecting screening.   [07]

Q.4   Write notes on **ANY THREE** of the following: [15]
- a) Manometers.
- b) Tumbling mill.
- c) Fluid flow through packed bed.
- d) Alpine air-jet sifter.

SECTION-II

Q.5   Answer **ANY FIVE** of the following: [10]
- a) State objectives of mixing process.
- b) Classify solid-liquid extraction equipments.
- c) Why deaeration and defoaming of mixtures is carried out?
- d) Give properties of ideal filter medium.
- e) How integrity and efficiency of HEPA filter is tested?
- f) Explain role of baffles in mixing.

Q.6   a) Explain in detail about methods used for solid-liquid extraction. Add a note on principle and working of Rotocel extractor.   [08]
    b) Give in detail mechanisms of liquid-liquid mixing. Add a note on principle and working of homogenizer.   [07]

Q.7   a) Write a note on theory of filtration. Explain principle and working of plate and frame filter press.   [08]
    b) Explain in detail principle, construction and working of Z-blade and planetary mixer.   [07]

Q.8   Write notes on **ANY THREE** of the following: [15]
- a) Screw extractor.

Day : Wednesday
Date : 19-11-2014

Time : 10.00 A.M. To 1.00 P.M.
Max. Marks : 80

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Draw neat and labelled diagrams **WHEREVER** necessary.
4) Figures to the right indicate **FULL** marks.

SECTION - I

Q.1		Attempt **ANY FIVE** of the following:	[10]
	a)	What is ribosome? What are its functions?	
	b)	Define physiology.	
	c)	What is cranial cavity? What are its organs?	
	d)	Give the anatomy and functions of squamous ephithelium.	
	e)	Define hypertension.	
	f)	Define thrombocytopenia.	
Q.2	a)	Explain in detail the process of blood clotting.	[08]
	b)	Classify WBC. Explain in detail the anatomy and physiology of agranulocytes.	[07]
Q.3	a)	Explain in detail the regulation of blood pressure.	[08]
	b)	Differentiate skeletal, smooth and cardiac muscle tissue.	[07]
Q.4		Write short notes on **ANY THREE** of the following:	[15]
	a)	Components of cell	
	b)	Blood groups	
	c)	ECG	
	d)	Conducting elements of heart	

SECTION - II

Q.5		Attempt **ANY FIVE** of the following:	[10]
	a)	Define lymph. Write its composition and functions.	
	b)	Write the functions of Larynx.	
	c)	Draw a neat labelled diagram of respiratory system.	
	d)	Define: **i)** Digestion **ii)** Internal respiration.	
	e)	Write the composition and function of saliva.	
	f)	What is vital capacity?	
Q.6	a)	Explain in detail mechanism of breathing. Add a note on exchange of O_2 and CO_2 during respiration.	[08]
	b)	Explain structure and functions of stomach.	[07]
Q.7	a)	Explain structure and functions of lungs and bronchioles.	[08]
	b)	Explain the general structure of alimentary canal.	[07]
Q.8		Write short notes on **ANY THREE** of the following:	[15]
	a)	Lymph node.	
	b)	Teeth.	
	c)	Composition and functions of bile.	
	d)	Nasal cavity.	

Day: Friday   Time: 10·00 A·M·To 1·00
Date: 14-11-2014   Max. Marks: **80**   P.M.

N.B.:

1) Q.No.1 and Q.No.5 are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each Section.
2) Answer to both the sections should be written in **SEPARATE** answer books.
3) Figure to the right indicates **FULL** marks.

SECTION-I

Q.1   Answer **ANY FIVE** of the following: **[10]**

a) Define the term Idiosyncrasy and Hypersensitivity.
b) Define and classify the term incompatibility.
c) Write the methods of dispensing of medications.
d) Give the Importance of 'Inscription' in prescription.
e) Write the importance of PMR.
f) In what proportion should 10% petroleum Jelly be used to produce 20gm of 7.5% povidone ointment.

Q.2 a) Define the term posology. Explain factors of affecting for the calculation of   **[08]** doses.

b) Give the types and salient features of containers. Explain in detail types of   **[07]** containers used for liquid dosage forms.

Q.3 a) Write in detail about pictograms and patient information leaflets as a patient   **[08]** counseling aid.

b) Explain in detail about physical incompatibility.   **[07]**

Q.4   Write a short note on (**ANY THREE**):   **[15]**

a) Features of British Pharmacopoeia .
b) Patient Medication Record.(PMR)
c) Handling of the prescription.
d) Improvisation of the dosage forms.

SECTION-II

Q.5   Answer **ANY FIVE** of the following: **[10]**

a) Define and give importance of solutions.
b) Differentiate between diffusible and Indiffusible types of suspension.
c) Enlist the importance of granules over the powders.
d) What will be the patient counseling note in case of inhalers?
e) Give the advantages of creams over the ointments.
f) Write the examples of preservatives and buffering agents.

Q.6 a) Write in detail about methods of preparation of emulsion.   **[08]**
b) Write the Ideal properties of suppository bases.   **[07]**

Q.7 a) Differentiate between Mouthwash and Gargles. Write about compounding   **[08]** and dispensing aspect of Zinc Sulphate and Zinc Chloride Mouthwash.
b) Define suspension. Classify the various types of suspending agents in detail.   **[07]**

Q.8   Write a short note on (**ANY THREE**):   **[15]**

a) Menthol and Eucalyptus Inhalation.

Day : Monday   Time : 10·00 A·M·To 1·00 P.M .
Date : 10-11-2014   Max. Marks : 80

N.B.:

1)   Q.No.1 and Q.No.5 are **COMPULSORY**. Out of remaining questions attempt **ANY TWO** questions from each section.
2)   Answers to both the sections should be written in the **SEPARATE** answer books.
3)   Draw neat and labelled diagrams **WHEREVER** necessary.
4)   Figures to the right indicate **FULL** marks.

SECTION - I

Q.1   Attempt **ANY FIVE** of the following: [10]
- a) Define the terms limit test and slightly soluble.
- b) State the use of barium chloride and alcohol in limit test for sulphate.
- c) Give two conditions for each causing hypokalemia and hyperkalemia.
- d) Define acidifying agents. Classify them with suitable examples.
- e) How to observe the colour intensity in Heavy metal limit test?
- f) Define buffer with any two example.

Q.2   a)   Discuss in detail manufacturing process as a source of impurities.   [07]
      b)   Explain limit test for arsenic in detail.   [08]

Q.3   a)   Discuss the properties, assay and uses of sodium chloride and sodium acetate.   [07]
      b)   Discuss all the buffer systems of body responsible for maintaining physiological acid base balance.   [08]

Q.4   Write short notes on **ANY THREE** of the following: [15]
- a) Electrolytes used for replacement therapy
- b) Limit test for chloride
- c) Constituents of pharmacopoeial monograph
- d) Factors affecting purity of pharmaceuticals

SECTION - II

Q.5   Attempt **ANY FIVE** of the following: [10]
- a) Define antacid. What are ideal requirements of antacids?
- b) What are gastrointestinal protectives and adsorbents?
- c) Discuss the mechanism of action of saline cathartics.
- d) Explain the role of simethicone in antacid preparations.
- e) Give application of bismuth sodium tartarate.
- f) Explain the assay of ferrous sulphate I.P.

Q.6   a)   Discuss the side effects associated with antacid therapy. Explain evaluation of antacid activity.   [07]
      b)   Classify antacids. Describe any two aluminum containing antacids in detail.   [08]

Q.7   a)   What are essential and trace elements? Explain physiological role of iron.   [07]
      b)   Write about iron deficiency disorders. Give a detail account of ferrous sulphate and Iron sorbite Injection.   [08]

Q.8   Write short notes on **ANY THREE** of the following: [15]
- a) Saline cathartics
- b) Iodine and its preparations
- c) Kaolin

Day : Wednesday   Time : 10.00 A.M. To 1.00

Date : 12-11-2014   Max. Marks : 80   P.M.

N.B.

1) **Q.1 & Q.5** are **COMPULSORY.** Out of the remaining solve any **TWO** questions from each Section.

2) Figures to the right indicate **FULL** marks.

3) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION – I
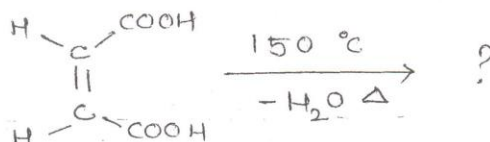
Q.1   Answer the following **(ANY FIVE)**   (10)

a) Define Atomic Orbital.

b) Dipole moment (μ) of carbon tetrachloride is 0 where as dipole moment of methyl chloride is 1.86 D. Explain why?

c) What is Homolysis and Heterolysis of bonds?

d) What is Ingold Scale?

e) Why nucleophilic substitution reactions are very difficult on aromatic compounds?

f) What is Bond dissociation energy?

g) Explain shapes of atomic orbitals.

Q.2   a) Define S_N^2 reaction.   Give its kinetics, mechanism, stereochemistry,   (10)
orientation and factors affecting rate of S_N^2 reaction.

b) Write structures to the following IUPAC names. **(ANY FIVE)**   (05)

i)   (z) – 1- chloro-2-butene

ii)   Ethyl-2-methyl butanoate

iii)   4-bromo hexanoic acid

iv)   p-nitroso-N, N-dimethylaniline

v)   4-methyl-2-pentyne

vi)   2-(N-methylamino) heptane

Q.3   a) Give contributing resonating structures in resonance.   (08)

b) Define Inductive effect. Give its applications in detail.   (07)

Q.4   Write short note on **(ANY THREE)**   (15)

a) Hyper conjugation

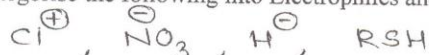b) Melting point

c) Hybridisation

d) Steric effect

P.T.O.

SECTION – II

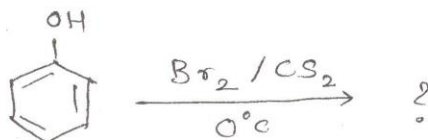**Q.5** Answer the following (ANY FIVE) (10)

a) Define Melamerism.

b) Explain – Cis – 1, 2 –dichloroethylene has μ of 1.89 D while the trans compound has $\mu = 0$.

c) Predict the product

$$H-\underset{\overset{\|}{C}}{C}\overset{COOH}{\diagup} \xrightarrow[-H_2O \ \Delta]{150 \ ^\circ C} \ ?$$
$$H-\underset{}{C}\diagdown_{COOH}$$

d) Categorise the following into Electrophiles and Nucleophiles

$Cl^{\oplus}$, $NO_3^{\ominus}$, $H^{\ominus}$, RSH

e) Enlist reagents used in Nitration reaction.

f) Predict the product

$$\text{OH} - \bigcirc \xrightarrow[0\ ^\circ C]{Br_2 / CS_2} \ ?$$

g) What happens when Cis –2–butene is treated with chloroform in presence of potassium-t-butoxide in liquid phase?

Q.6 a) Define reaction intermediate. Give an account on carbocations, carbon radicals. (10)

b) Write a short note on sulphonation reaction. (05)

Q.7 a) Define Isomerism. Explain in detail Structural Isomerism. (08)

b) Explain orientation of electrophiles in monosubstitution benzenes. (07)

Q.8 Write short notes on (ANY THREE) (15)

a) Optical Isomerism

b) Tautomerism

c) Collision Theory

d) Halogenation reactions

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