Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR PHARM D. DEGREE EXAMINATION – AUGUST 2009

SUBJECT: PD 1.1: HUMAN ANATOMY AND PHYSIOLOGY

Monday, August 03, 2009

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

- **Answer ALL the questions. Draw diagrams wherever necessary.**
- **Answer Sections "A" and "B" in Separate Answer books.**

SECTION "A" – ANATOMY : (35 MARKS)

1. Name the relations of the left kidney. Describe its gross and microscopic structure.

(5+5 = 10 marks)

2. Write short notes on:

2A. Trachea

2B. Meninges of the brain

2C. Muscles of respiration

(5×3 = 15 marks)

3. Write briefly on the following:

3A. Duodenum

3B. Openings of the ducts of salivary glands

3C. Histology of smooth muscle

3D. Nucleus of the cell

3E. Functions of lymphatic system

(2×5 = 10 marks)

SECTION "B" – PHYSIOLOGY : (35 MARKS)

4. With the help of an ideal spirogram, give an account of lung volumes and capacities.

(10 marks)

5A. Define erythropoiesis. Name the different stages of erythropoiesis in adults. Enumerate the factors which regulate erythropoiesis.

5B. Name the different types of muscle fibers present in the body. Give two differences between them.

5C. With the help of a tabular column, give the differences between the I and II heart sounds.

(5×3 = 15 marks)

6A. Define deglutition. Name the different stages of deglutition.

6B. List the functions of the kidney.

6C. List the functions of rods and cones.

6D. Enumerate the functions of cerebral cortex.

6E. List the actions of growth hormone.

(2×5 = 10 marks)

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FIRST YEAR PHARM D.DEGREE EXAMINATION – AUGUST 2009

SUBJECT: PD 1.2: PHARMACEUTICS

Tuesday, August 04, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 70

✍ **Answer ALL Questions.**

1. LONG ESSAY QUESTIONS

1A. Define and classify Monophasic dosage forms. Write the principle involved in the preparation of cresol with soap solution IP and calamine lotion.

1B. Define incompatibility. Write a brief note on different types of Therapeutic incompatibilities.

1C. Define Posology. Write the factors affecting the dose selection of drugs.

(10 × 3 = 30 marks)

2. SHORT ESSAY QUESTIONS

2A. Explain the chemical sterilization of catgut.

2B. Classify Pharmacopoeia with examples. Write a note on development of Indian Pharmacopoeia. Write the salient features of IP 2007.

2C. Classify powders. Write notes on eutectic and explosive powders with examples.

2D. Explain evaluation tests for suppositories.

2E. Define prescription and explain in details the handling of prescription.

2F. Explain the historical development of pharmacy with specific reference to Pharmaceutical industry.

(5 × 6 = 30 marks)

3. SHORT ANSWER QUESTIONS

3A. In what proportion should alcohol of 95% and 50% be added to make 70% alcohol?

3B. Define sutures and ligatures.

3C. Name any two coloring and flavouring agents.

3D. Define flocculating and deflocculating suspension.

3E. Preservative is not necessary in the case of simple syrup. Justify.

(2 × 5 = 10 marks)

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FIRST YEAR PHARM D. DEGREE EXAMINATION – AUGUST 2009

SUBJECT: PD 1.3: MEDICINAL BIOCHEMISTRY

Wednesday, August 05, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 70

✍ LONG ESSAY QUESTIONS

1A. Define gluconeogenesis with its sources.
1B. Describe the complete pathway of gluconeogenesis.
1C. Add a note on Von Gierke's disease.

(2+7+1 = 10 marks)

2A. Explain the synthesis, transport and utilization of ketone bodies.
2B. Add a note on ketosis.

(8+2 = 10 marks)

3A. Classify enzymes with suitable examples.
3B. Explain the effect of substrate, pH and temperature on enzyme activity.
3C. Add a note on coenzyme.

(2+6+2 = 10 marks)

✍ SHORT ESSAY QUESTIONS

4. Describe urea cycle.

5. Explain the structural organization of electron transport chain.

6. Describe the process of DNA replication.

7. Write the pathway for production of uric acid.

8. Explain enzyme inhibition with suitable examples.

9. Outline the cholesterol synthetic pathway.

(5×6 = 30 marks)

✍ SHORT ANSWER QUESTIONS

10. Write the significance of HMP shunt.

11. Draw a neat and labeled diagram of cell.

12. Define and classify mutation.

13. Give the normal values and one significance for estimation of following blood tests:
13A. Sodium
13B. Bicarbonate
13C. Uric acid
13D. Alkaline phosphatase

14. Classify hyper lipoproteinemia and mention the cause for each condition.

(2×5 = 10 marks)

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FIRST YEAR PHARM D. DEGREE EXAMINATION – AUGUST 2009

SUBJECT: PD 1.4: PHARMACEUTICAL ORGANIC CHEMISTRY

Thursday, August 06, 2009

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

Answer ALL the questions.

Long Essay Questions.

1A. Discuss the mechanism of addition of HBr to propene in the absence of peroxides.

1B. Show how the mechanism is affected by the presence of peroxides.

(5+5 = 10 marks)

2. Explain the unimolecular nucleophilic substitution reaction with emphasis on:
   i) Kinetics
   ii) Mechanism
   iii) Stereochemistry
   iv) Effect of solvent

(10 marks)

3A. Discuss the effect of substituent groups on electrophilic aromatic Substitution.

3B. Write a note on orientation in electrophilic aromatic substitution.

(5+5 = 10 marks)

Short Essay Questions.

4A. Explain the reactions of alkene with mechanism:
   i) Addition of Hydrogen halides
   ii) Acid-Catalysed addition of water.

4B. How do you convert carboxylic acids to acid chlorides and amides?

4C. Explain the stability of conjugated dienes.

4D. Write a note on Hyperconjugation.

4E. Explain the following reactions with mechanism:
   i) Kolbe-Schmidt reaction
   ii) Claisen condensation

4F. Discuss orientation in nucleophilic aromatic substitution.

(5×6 = 30 marks)

Short Answers

5A. What are the products of dehydrohalogenation of 2-chlorobutane?

5B. Give the structural formula of:
   i) 2,4-dimethyl-3-hexanone
   ii) Propen-2-ol

5C. CO_2 has a dipole moment zero, while water has a dipole moment 1.84D. Explain.

5D. How will you convert toluene into *m*-nitrobenzoic acid?

5E. How will you assay Dimercaprol?

(2×5 = 10 marks)

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FIRST YEAR PHARM D DEGREE EXAMINATION – AUGUST 2009

SUBJECT: PD 1.5: PHARMACEUTICAL INORGANIC CHEMISTRY

Friday, August 07, 2009

Time: 10:00 – 13:00 Hrs. Max. Marks: 70

Long Essay.

1A. Write a note on hazards and precautions to be taken during the handling of radiopharmaceuticals.

1B. Give one method of preparation and labeling of Oxygen, Carbondioxide and Nitrous oxide.

((2+2)+((1+1)×3) = 10 marks)

2A. Name few saline cathartics and how saline cathartics acts?

2B. Write the method of preparation and the principle involved in the assay of Magnesium sulphate.

(2+(4+4) = 10 marks)

3A. What are non-aqueous titrations? Give one example with principle and reactions which can be assayed by this method.

3B. Write the principle and steps involved in the gravimetric analysis.

(5+5 = 10 marks)

Short Essay

4A. What is the principle and reactions involved in the limit test for Arsenic?

4B. Write the method of preparation, principle involved in the assay and uses of Ferrous sulphate.

4C. What is chemically Bentonite? Mention its use. How do you test for its purity?

4D. Define electrolyte combination therapy and give the composition of ORS powder.

4E. Give any one aluminium compound as antacid, write the assay involved in it.

4F. Give the preparation, principle involved in the assay and uses of Ammonium chloride.

(5×6 = 30 marks)

Short Answers

5A. Write the principle involved in the limit test for sulphate limit test.

5B. What is reason for adding glycerol in the assay of Boric acid?

5C. Give one example each for the following:

i) Lubricant
ii) Sedative
iii) Astringent
iv) Anti-caries agent

5D. Complete and balance the following equations:

i) $KMnO_4 + H_2SO_4 + H_2O_2 \longrightarrow$

ii) $AgNO_3 + HCl \longrightarrow$

5E. What are the applications of radiopharmaceuticals?

(2×5 = 10 marks)

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FIRST YEAR PHARM D.DEGREE EXAMINATION – AUGUST 2009

SUBJECT: PD 1.6: REMEDIAL MATHEMATICS

Saturday, August 08, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 70

✍ **Answer ALL Questions.**

1. Long Essays:

1A. i) Find *B (adj A)*, given $A = \begin{bmatrix} 2 & -1 & 3 \\ -1 & 4 & 2 \\ 0 & -3 & 1 \end{bmatrix}$; $B = [-1 \quad 2 \quad -1]$

ii) Solve the equation using matrix method:
$3x - y + 2z = 13$; $2x + y - z = 3$; $x + 3y - 5z = -8$.

(5 + 5 = 10 marks)

1B. i) Evaluate: $\int_0^{\frac{\pi}{2}} \frac{\sin^3 x \, dx}{\sin^3 x + \cos^3 x}$.

ii) Solve the linear differential equation: $\cos^2 x \frac{dy}{dx} + y = \tan x$.

(5 + 5 = 10 marks)

1C. i) Find $\frac{dy}{dx}$, given that $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = a$ where 'a' is a constant.

ii) For the parabola, $y^2 - 6x + 18 = 0$, find vertex, focus, ends of latus rectum, length of latus rectum and equation of the directrix.

(5 + 5 = 10 marks)

2. Short Essays:

2A. A circle has its centre on the y – axis and passes through (-1, 3) and (2, 5). Find its equation.

2B. Form the differential equation of the family of circles touching both x and y axes and lying in the first quadrant.

2C. Find 'x' from $(2x - 3)(cosec^2 60° - sin 45°) = x \tan^2 45° - sec^2 30° - 2$

2D. Evaluate: $\lim_{x \to 0} \left[\frac{(1+x)^3 - (1-x)^3}{x + x^3}\right]$.

2E. Find the slope of the line passing through the points A(-2, 3) and B(2, 7). Also find:

i) the inclination of the line AB,

ii) slope of the line parallel to AB,

iii) slope of the line perpendicular to AB.

2F. Find the angle between the lines $2x - y + 3 = 0$ and $x - 3y + 2 = 0$.

(5×6 = 30 marks)

3. Short Answers:

3A. If $A = \begin{pmatrix} 1 & 2 & 3 & 0 \\ 4 & 1 & 0 & 5 \end{pmatrix}$ and $B = \begin{pmatrix} 3 & 1 \\ -4 & 2 \\ 1 & 3 \\ 0 & -1 \end{pmatrix}$ find $2A + 3B'$.

3B. Find the radius of the circle $x^2 + y^2 + 4x - 6y - 12 = 0$.

3C. Differentiate $y = \dfrac{x^2 - x\sqrt{2} + 1}{x^2 + x\sqrt{2} + 1}$ with respect to x.

3D. Evaluate: $\int x \sin 3x \, dx$.

3E. Show that the points A(8, 3), B(0, 9) and C(14, 11) are the vertices of an isosceles triangle.

(2×5 = 10 marks)