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Q3) Attempt the following: (Any 8)

[8 × 5 = 40]

- a) Explain in detail prostaglandins. <https://pharmacyindia.co.in/>
- b) Write mechanism of action & medicinal applications of Isobarbide dinitrate & captopril.
- c) Write mechanism of action & medicinal applications of furosemide & spiranolactone.
- d) Outline the synthetic scheme of <https://pharmacyindia.co.in/>
- i) Cetirizine <https://pharmacyindia.co.in/>
- ii) Promethazine
- e) Explain in brief - oral contraceptives.
- f) Classify anti-arrhythmic agents with suitable examples.
- g) Discuss in brief oral hypoglycemic agents with examples.
- h) Explain in brief local anaesthetics. <https://pharmacyindia.co.in/>
- i) Elaborate development of H₂ antagonists.
- j) Classify corticosteroids in detail <https://pharmacyindia.co.in/>
- <https://pharmacyindia.co.in/>



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SEAT No. :

PA-873

[Total No. of Pages :2

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[5940]-5002

Third Year B. Pharmacy
BP 502T : INDUSTRIAL PHARMACY - I
(2019 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) Neat labeled diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

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Q1) Answer the following : (Any 2)

[20]

- a) Explain the mechanism of wet granulation and in detail high shear granulator and fluidized bed granulator.
- b) Discuss in detail formulation development of hard gelatin capsule, standards & defects thereof . Explain the volumetric and dosalor principle in capsule filling.
- c) Discuss defects in tablet coating and explain remedies thereof.
- d) What is pelletization? Describe in detail the process of extrusion pelletization.

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Q2) Answer the following: (Any 8)

[40]

- a) Define biphasic dosage form. Explain stability consideration of biphasic dosage form.
- b) What are type A and type B gelatin?
- c) Explain different types of aerosol system.
- d) Write a note on quality control of aerosol system.
- e) Describe controlled flocculation in structured vehicle.
- f) Discuss formulation of soft gelatin capsules.

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- g) Write a note on Lipsticks. <https://pharmacyindia.co.in>
- h) What is preformulation? Explain important physicochemical properties in preformulation studies. <https://pharmacyindia.co.in/>
- i) Explain importance of base adsorption in softgels.
- j) What is HLB? Explain its application in formulation of biphasic liquid orals.

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Q3) Write a short note on (Any 5) : [15]

- a) Cold cream. <https://pharmacyindia.co.in/>
- b) Sugar coating.
- c) Directly compressible excipients with their trade names.
- d) Evaluation of ophthalmic preparations.
- e) Sunscreens and SPF. <https://pharmacyindia.co.in/>
- f) Types of ophthalmic dosage form.
- g) IPQC test of capsules as per I.P.

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[5940]-5003

Third Year B. Pharmacy
BP 503T : PHARMACOLOGY - II
(2019 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) Neat labelled diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

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Q1) Attempt any five of the following:

[15]

- a) Justify the role of diuretics in the treatment of congestive heart failure.
- b) Write mechanism of action of ACTH.
- c) Enlist the hormones secreted by Anterior pituitary with physiological role.
- d) Define and classify and thyroid drugs.
- e) Explain mechanism of action and therapeutic uses of vasopressin.
- f) Classify anti histaminics with examples.
- g) Classify and coagulant. Write mechanism of actions of warfarin.

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Q2) Attempt any two of the following:

[20]

- a) Discuss biosynthesis, mechanism of action, pharmacological actions and therapeutic uses of estrogen.
- b) Write advantages, disadvantages and types of the bioassay. Add a note on bioassay of insulin.
- c) Classify oral hypoglycaemic agents. Explain pharmacotherapy of type 2 diabetes.
- d) Classify NSAIDs and write pharmacological details of Aspirin.

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Q3) Attempt any eight of the following: [40]

- a) Explain the role of gonadotropins in male.
- b) Write note on sulfasalazines. <https://pharmacyindia.co.in/>
- c) Define and classify the drug acting on uterus.
- d) Write a note on β - blockers.
- e) Write a note on corticosteroids. <https://pharmacyindia.co.in/>
- f) Write mechanism, adverse effect and uses of diltiazem, verapamil and nifedipine?
- g) Explain pharmacology of thiazide diuretics?
- h) Discuss pharmacological action of digitalis for the treatment of congestive heart failure. <https://pharmacyindia.co.in/>
- i) Classify antianginal drug. Describe the therapeutic utility of vasodilators in angina pectoris.
- j) Justify combination of statins and resins to treat hyperlipidemia.

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[5940]-5004

Third Year B. Pharmacy

PHARMACOGNOSY AND PHYTOCHEMISTRY - II (2019 Pattern) (Semester - V) (BP504T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates :

- 1) All questions are compulsory. <https://pharmacyindia.co.in/>
- 2) Neat labeled diagram must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

<https://pharmacyindia.co.in/>

Q1) Objective type questions (Answer 5 out of 7) :

[5 × 3 = 15]

- a) Define secondary plant metabolite with suitable examples.
- b) Give botanical source and Chemical Constituent of Tea.
- c) Give the source and uses of eugenol containing crude drug.
- d) Write identification test for Sennoside. <https://pharmacyindia.co.in/>
- e) Give chemical constituents and uses for Liquorice.
- f) Utilization of Vinca alkaloids.
- g) Write the applications of Microwave assisted extraction.

<https://pharmacyindia.co.in/>

Q2) Answer the following (Any 2 out of 4) :

[2 × 10 = 20]

- a) Define Alkaloids. Explain Biological source, classification, chemistry and medicinal uses of Vinca and Rauwolfia. <https://pharmacyindia.co.in/>
- b) Explain in detail about super critical fluid extraction and solid phase extraction. <https://pharmacyindia.co.in/>
- c) Explain industrial production and estimation of Sennosides and vinblastine.
- d) What are cardiac glycosides? Give the Pharmacognosy of Digitalis in detail.

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Q3) Answer the following (Any 8 out of 10) : [8 × 5 = 40]

<https://pharmacyindia.co.in/>

- a) Write a note on radio isotopes and their applications in biogenetic studies.
- b) Give the biological source, Chemical constituents and uses of any two volatile oil drugs. <https://pharmacyindia.co.in/>
- c) Write the isolation and estimation of Glycyrrhetic acid.
- d) Explain the industrial production and uses of Artemisinin.
- e) Explain the role of column chromatography in isolation and purification of phytoconstituents. <https://pharmacyindia.co.in/>
- f) Write the method of production and identification for Atropine.
- g) Write the isolation and identification of Curcumin. <https://pharmacyindia.co.in/>
- h) Give the chemical constituents and therapeutic uses of Mentha and Fennel.
- i) Write about the role of radioactive isotopes in the investigation of biogenetic studies. <https://pharmacyindia.co.in/>
- j) Explain with a neat labeled microscopic diagram of Fennel

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PA-876

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[5940]-5005

Third Year B. Pharmacy

PHARMACEUTICAL JURISPRUDENCE (Theory) (2019 Pattern) (Semester - V) (BP505T)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.

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Q1) Answer the questions (Objectives) (Answer 5 out of 7) : [5 × 3 = 15]

- a) What is opposition to grant of patent. Enlist criteria?
- b) Write the qualification and duties of drug inspector.
- c) What are schedule J and Y? <https://pharmacyindia.co.in/>
- d) Explain the formula to calculate the retail price of formulation as per DPCO.
- e) Differentiate between State pharmacy council and Joint state pharmacy council. <https://pharmacyindia.co.in/>
- f) What is illicit traffic?
- g) What is product patent?

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Q2) Long Answers (Any 2 out of 4) :

[2 × 10 = 20]

- a) What are salient features of intellectual property? Explain various types of intellectual property. <https://pharmacyindia.co.in/>
- b) Give the constitution and functions of Drugs Technical Advisory Board (DTAB) and Drug Consultative Committee (DCC) as per Drugs & Cosmetics Act & Rules.

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c) Discuss in detail the objectives and salient features of Drugs and Magic Remedies Act and Rules 1976. <https://pharmacyindia.co.in/>

d) Discuss in detail the objectives and salient features of Medical Termination of Pregnancy Act, 1971 and Rules 1975.

<https://pharmacyindia.co.in/>

Q3) Short Answers (Answer 8 out of 10) : **[8 × 5 = 40]**

a) Write short note on loan license.

b) Prohibited class of advertisements as per Drugs and Magic Remedies Act. <https://pharmacyindia.co.in/>

c) Qualification and duties of Government Analyst under D & C Act.

d) What is Patent infringement? Explain its significance.

e) Explain Non-bonded Manufactory. <https://pharmacyindia.co.in/>

f) Write requirements of drug store as per D & C Act 1940.

g) Pharmaceutical code of ethics.

h) Write short note on Schedule M.

i) Exclusive marketing right. <https://pharmacyindia.co.in/>

j) Discuss about Animal Welfare Board of India and experimentation of animals according to prevention of cruelty to Animals Act, 1960.

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T.Y.B. Pharmacy

MEDICINAL CHEMISTRY-III

(Semester-VI) (BP601T) (2019 Pattern)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

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- 1) *All questions are compulsory, internal choices are given.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw neat diagrams and structures wherever necessary.*

<https://pharmacyindia.co.in/>

Q1) Objective type questions (Answer 5 out of 7)

[5×3=15]

- a) Define and classify anti-neoplastic agents.
- b) Define and classify antimalarial agents. <https://pharmacyindia.co.in/>
- c) What are beta-lactam antibiotics? Classify beta lactam antibiotics.
- d) Define and classify macrolide antibiotics.
- e) Enlist various physico-chemical parameters used in QSAR.
- f) Define and classify anthelmintic drugs.
- g) Fill in the blank <https://pharmacyindia.co.in/>
 - i) Penicillins are group of antibiotics originally obtained principally from _____ and _____ penicillium mold
 - ii) Tuberculosis (TB) is an infection disease usually caused by _____ bacteria.
<https://pharmacyindia.co.in/>
 - iii) Malaria is caused by single-called micro-organism of plasmodium group. It is spread exclusively through bites of infected _____ according to a 2014 WHO fact sheet.

<https://pharmacyindia.co.in/>

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Q2) Long answer (Answer 2 out of 4) [Visit pharmacyindia.co.in](https://pharmacyindia.co.in) [2×10=20]

- Describe the chemistry, SAR and MOA of Quinolones anti-infective agents.
<https://pharmacyindia.co.in/>
- Define and classify antifungal agents and describe the SAR and MOA of anti fungal azoles.
- Describe the chemistry, SAR and MOA of penicillin antibiotics.
- Describe chemistry and MOA of alkylating agents and antimetabolites used as antineoplastic agents.

<https://pharmacyindia.co.in/>

Q3) Short Answer (answer 8 out of 10) [8×5=40]

- Draw the scheme of synthesis for ciprofloxacin.
- Write a note on tetracycline antibiotics. <https://pharmacyindia.co.in/>
- Discuss SAR of quinolines antimalarials.
- Explain chemistry and MOA of anthelmintic drugs.
- Write a note on anti-protozoal agents.
- Discuss Hansch QSAR analysis and Ferguson principle.
- Draw the scheme of synthesis for isoniazid.
- Write a note on aminoglycoside antibiotics. <https://pharmacyindia.co.in/>
- Write a note on antiviral : DNA virus inhibitor agents.
- Explain chemistry, MOA of plant products use as anticancer agents.

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T.Y.B. Pharmacy
BP 602T : PHARMACOLOGY - III
(2019 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

<https://pharmacyindia.co.in/>

- 1) *All questions are compulsory, internal choices are given.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw neat diagrams and structures wherever necessary.*

Q1) Objective type questions (Answer 5 out of 7).

[15]

- a) Define & classify Analeptics.
- b) Classify Antiemetics with MOA of ondansetron.
<https://pharmacyindia.co.in/>
- c) Write clinical symptoms and management of barbiturate poisoning.
- d) Define leprosy. Classify antileprotic drugs. <https://pharmacyindia.co.in/>
- e) Elaborate the term chemotherapy and antibiotics with example.
- f) What is COPD? Enlist drug used in treatment of COPD.
- g) Define Laxative. Classify drugs used for constipation.

<https://pharmacyindia.co.in/>

Q2) Long answer (Answer 2 out of 4).

[20]

- a) Define peptic ulcer, classify anti-ulcer drugs & give MOA, pharmacological action, adverse effect & therapeutic uses of omeprazole.
<https://pharmacyindia.co.in/>
- b) Write a note on general principles of treatment of poisoning.
- c) Classify cephalosporin. Write Mechanism of Action, adverse effect and uses of cephalosporin.
- d) What is T.B.? Classify antitubercular drugs and give MOA, pharmacological action, adverse effect & therapeutic uses of isoniazid in details.

<https://pharmacyindia.co.in/>

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Q3) Short answer question (Answer 8 out of 10). [40]

<https://pharmacyindia.co.in/>

- a) Classify antiviral drugs with side effects & uses of Acyclovir.
- b) Write a note on Expectorants.
- c) Give rational use of antibiotics.
- d) Classify anti-asthmatic drugs. Explain pharmacology of bronchodilator drugs.
<https://pharmacyindia.co.in/>
- e) Write a note on 420 oral acute toxicity studies in rodent.
- f) Explain in detail genotoxicity.
- g) Classify antifungal drugs and give adverse effect & therapeutic uses of amphotericin B.
<https://pharmacyindia.co.in/>
- h) Write a short note on pharmacotherapy of diarrhoea.
- i) Give detail account on cancer chemotherapy.
- j) Classify immunostimulant & give MOA of any one drug.

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T.Y. B. Pharmacy

BP603T : HERBAL DRUG TECHNOLOGY

(2019 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

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- 1) All questions are compulsory.
- 2) Neat labeled diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Objective type (Answer 5 out of 7)

[5×3=15]

- a) Write a note on Preparation and Evaluation of Herbal Shampoo.
<https://pharmacyindia.co.in/>
- b) Explain in detail possible side effects and interaction of Ephedra.
- c) Describe in Proanthocyanidins as Nutraceuticals.
- d) ICH guidelines for stability of herbal drugs. <https://pharmacyindia.co.in/>
- e) Write a note on natural binders and disintegrants.
- f) Give the advantages of Novel dosage forms in herbal formulation.
<https://pharmacyindia.co.in/>
- g) Write a note on Ashwagandha as Nutraceutical.

Q2) Long Answer (Answer 2 out of 4)

[2×10=20]

- a) Define Bhasma. Explain in detail method of preparation and evaluation of Bhasma.
<https://pharmacyindia.co.in/>
- b) Give sources and description of raw materials for hair cosmetics. Explain preparation and evaluation of hair cosmetic preparation.
- c) Classify the nutraceuticals with e.g. Describe omega 3 fatty acid and Resveratrol as Nutraceutical.
<https://pharmacyindia.co.in/>
- d) Define Natural Pesticides. Classify the biopesticides with e.g. Write in detail Pharmacognostic account of Neem as Natural pesticide.

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Q3) Short Answer (Answer 8 out of 10)

[8×5=40]

- a) Explain basic principles involved in Ayurveda. <https://pharmacyindia.co.in/>
- b) Explain preparation and evaluation of Asava and Arishta.
- c) Describe Guidelines for Good Agriculture and Collection Practices for Medicinal plants. <https://pharmacyindia.co.in/>
- d) Classify the Herbal Excipients with e.g. Discuss in detail Natural Perfumes.
- e) Elaborate on scope of Herbal Drug Industry.
- f) Schedule T. <https://pharmacyindia.co.in/>
- g) Write a note on Homeopathic system of medicine.
- h) Describe natural sweeteners.
- i) Write a note on Herbal Drug Interaction. Describe interaction and toxicity of Hypericum. <https://pharmacyindia.co.in/>
- j) Write a note on Churna.



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T. Y. B. Pharmacy

BP 604T : BIOPHARMACEUTICS AND PHARMACOKINETICS

(2019 Pattern) (Semester-VI)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

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- 1) All questions are compulsory.
- 2) Neat labelled diagrams must be drawn wherever necessary.

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Q1) Answer the following (Any 5) [15]

- a) What are different pathways of drug absorption?
- b) Give the reasons for higher solubility and better dissolution of salt forms of drug.
<https://pharmacyindia.co.in/>
- c) What are the various sites of drug metabolism in the body?
- d) Explain with significance the study parameters used in bioavailability determination.
- e) Enlist the components of blood to which drug binds.
- f) Define & Differentiate absolute and relative bioavailability.
- g) Explain which parameters decide time to reach steady state plasma concentration of drug after i.v. infusion.
<https://pharmacyindia.co.in/>

Q2) Answer the following (Any 2) [20]

- a) Enlist various factors affecting absorption and explain in detail pharmaceutical factors affecting absorption of drug from GIT.
- b) Explain the concept of BCS. Give it significance and add note on BDDCS.
- c) Describe the factors influencing protein binding of drug. Give significance of Protein binding.
<https://pharmacyindia.co.in/>
- d) What is compartmental modeling? Explain one compartmental open model for i.v. bolus administration of the drug.

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Q3) Answer the following (Any 8) [40]

- a) Define and Explain in short -MRT, AUC.
- b) Enlist various methods to estimate absorption rate constant (k_a) after oral administration. <https://pharmacyindia.co.in/>
- c) Explain the design for one compartmental open model for the zero-order i.v. infusion.
- d) Differentiate between active transport and a facilitated diffusion?
- e) What are the factors that influence passive re-absorption of drugs the renal tubules? <https://pharmacyindia.co.in/>
- f) What is Non-Linear Pharmacokinetics? Explain Michaelis Menten equation and determination of V_{max} and K_m .
- g) Explain a drug transport across the blood-brain barrier with the help of a diagram. <https://pharmacyindia.co.in/>
- h) Why drugs are better absorbed from small intestine? Explain.
- i) What are the possible mechanisms of enzyme induction and enzyme inhibition?
- j) Define absorption of drug. Discuss influence of Physicochemical properties of drug on absorption.

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T.Y. B. Pharmacy

BP605T : PHARMACEUTICAL BIOTECHNOLOGY

(2019 Pattern) (Semester - VI)

Time : 3 Hours]

<https://pharmacyindia.co.in/>
[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

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Q1) Answer 5 out of 7 :

[5×3=15]

- a) Highlight use of microbes in industry.
- b) What is protein engineering? <https://pharmacyindia.co.in/>
- c) Explain applications of genetic engineering.
- d) Illustrate applications of biosensors in pharmaceutical industries.
- e) Discuss basic steps involved in recombinant DNA technology.
- f) Discuss aeration process used in fermentation.
- g) Describe the principle of southern blotting.

<https://pharmacyindia.co.in/>

Q2) Answer 2 out of 4 :

[2×10=20]

- a) What is cloning vector? Discuss ideal properties of cloning vectors and write a note on types of cloning vectors in detail. <https://pharmacyindia.co.in/>
- b) What are hypersensitivity reactions? Classify hypersensitivity reactions and explain them in detail.
- c) What is fermentation? Highlight general requirements of fermentation and discuss production of penicillins by fermentation technology.
- d) What is hybridoma technology? Discuss production of monoclonal antibodies by hybridoma technology and their applications.

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Q3) Answer 8 out of 10 : [Visit - pharmacyindia.co.in](https://pharmacyindia.co.in)

[8×5=40]

<https://pharmacyindia.co.in/>

- a) What is mutation? Briefly summarize types of mutation.
- b) Explain the methods of enzyme immobilization.
- c) Write a note on restriction endonuclease and DNA ligase.
- d) Discuss production of hepatitis B vaccine by recombinant DNA technology.
<https://pharmacyindia.co.in/>
- e) Describe structure and function of MHC.
- f) Write a note on microbial biotransformation.
- g) Outline preparation of toxoids. <https://pharmacyindia.co.in/>
- h) Explain structure of immunoglobulin.
<https://pharmacyindia.co.in/>
- i) Describe collection, processing and storage of whole human blood.
- j) Write a note on ELISA.

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Total No. of Questions : 3] Visit - pharmacyindia.co.in

SEAT No. :

PA-882

[5940]- 6006

[Total No. of Pages : 2

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T. Y. B. Pharmacy

**BP 606T :PHARMACEUTICAL QUALITY ASSURANCE
(2019 Pattern) (Semester - VI)**

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

<https://pharmacyindia.co.in/>

Q1) Attempt any five of the following.

[15]

<https://pharmacyindia.co.in/>

- a) Comment on “Validation is an essential part of GMP practice”.
- b) What is the role and functions of WHO?
- c) Briefly describe the importance of training in pharmaceutical manufacturing.
- d) Outline a general format for SOP.
- e) State importance of NABL accreditation.
- f) How is scrap and waste material disposed in pharmaceutical industry?
- g) What is ISO? Elaborate benefits and limitations of ISO.

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Q2) Attempt any two of the following.

[20]

- a) Define Total Quality. Give the basic concept, objectives and principles of TQM.
- b) Who are the key personnel in pharmaceutical industry? Provide requirements of organization and personnel as per GMP.
- c) State importance of distribution record. Discuss the principles and process of product recall in a pharmaceutical industry.
- d) Discuss the concept of Batch manufacturing record (BMR/BPCR) with suitable formats.

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P.T.O.

Q3) Attempt any eight of the following.

[40]

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- a) What are QA and QC? Differentiate QA and QC.
- b) Explain URS and IQ.
- c) Write a note on prospective Validation.
- d) Explain linearity and range with respect to analytical method validation.
- e) What does USFDA regulates? <https://pharmacyindia.co.in/>
- f) Give a brief overview of ICH stability testing guidelines.
- g) Discuss the concept of QbD with elements of QbD program.
- h) Design a plant layout of pharmaceutical industry considering manufacturing of tablet dosage form.
- i) Write a note on Environmental control in sterile areas.
- j) Describe process of selection and purchase of equipment for pharmaceutical manufacturing. <https://pharmacyindia.co.in/>

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