Syllabus for MD (Ayurved) Final Examination

BHAISHAJYA KALPANA

LECTURES-400
PRACTICALS-150

PAPER-I

Adharabhuta Siddhant and Pharmacy Management

Adharabhuta Siddhant

Concept of Bhesaja and Kalpana, difference between Aushad and Bhesaj, History and Chronological evaluation of Bhaishajya kalpana. Knowledge about classical texts related to Bhaishajya kalpana with special emphasis on Bruhatrayi, Sharangdhar Samhita, Chakradatta, Bhesaj Kalpa, Bhaishajya Ratnavali, Bhava Prakash Nighantu, Vaidyaka Paribhasha Pradipa,

1. Fundamental Principles of Bhaishajya kalpana and Rasa shastra including principles of designing different formulations with reference to Samslesha Vishleha and other principles.
2. Study of ancient and metric systems of weights and measures including Kala mana with their correlation.
3. Technical terminologies (Paribhasha) used in Bhaishajya kalpana and Rasa shastra
4. Ancient and Modern methods of Collection, Storage and Preservation of different Fresh and Dry Aushadhi dravyas, their Grahya Agrahyatva
5. Detailed knowledge of Matra (Therapeutic Dose), Anupana, Aushadha sevan kala and Route of Drug Administration
6. Ancient view of Aushadha nirmana shala and Ayurvedic pharmacy in accordance with GMP.

Pharmacy Management

   a) Marketing Pharmaceutical Services
   b) Product Release and Withdrawals
   c) Community Pharmacy
   d) Laws Governing Pharmacy
      i. Relevant regulatory provisions of Ayurvedic drugs in Drug and Cosmetic Act 1940 and Rules 1945
ii. Laws pertaining to Drugs and Magic remedies (objectionable advertisement) Act-1954.

iii. Prevention of Food Adulteration (PFA) act.

iv. Laws pertaining to Narcotics

v. Factory and Pharmacy Acts

vi. Consumer Protection Act -1986

8. Regulatory Affairs related to International Trade and Practices of Ayurvedic Drugs

9. Introduction to Ayurvedic Pharmacopoeia of India, Ayurvedic Formulary of India.

10. Introduction to Indian Pharmacopoeia, British and United States Pharmacopoeia, Pharmacopieial Codex

11. Introduction to Traditional Knowledge Digital Library

PAPER-II

Aushadha Prasamsaskarana

1. Detailed ancient & contemporary knowledge with Pharmacognostical/Geochemical/Mineralogical identification, source, occurrence, availability, classification, physico-chemical characterization, grahya-agrahyatva, therapeutic properties and uses of raw material of plant, mineral and animal origin.

2. Detailed knowledge of ancient and contemporary Yantropakarana and their accessories used in Aushadhikaran and their contemporary modification such as Khalva yantras, Peshani Yantra, Pulveriser, Disintegrator, Sieve Shaker, Tableting Machine, coating pan, Pill thread making and Pill cutting Machine, Mixer, Mass Mixer, Grinder, Emulsifier, Strip/Blister Packing Machine, Bottle sealing, Pouch packing Machine, Ointment Making Machine, Chullika, Koshthis, Bhrashtris, and other heating appliances, Svedan Yantra, Ovens, driers etc. used in manufacturing of small scale and large scale manufacturing of Ayurvedic Formulations along with their applications.

3. Study of Samskara, definition, types and its effect on Physico-chemical and Therapeutic properties of Samskararha dravya. Role of Agni (Heat), Jala and other dravas (Water and other processing liquids), Kala (Time span), Patra (Container) and other processing materials and their significance in Aushadhikaran.

4. Study of Mardana and its significance in Aushadhikaran. Concept of Bhavana, detailed knowledge of ancient and contemporary grinding and trituration techniques.

5. Detailed Knowledge of Concept, Standard Operating Procedure of manufacturing, Standardization, Quality control, Storage, Technological development in processing and modification in following dosage forms in relation to their usage and acceptability.

1. Panchavidha Kashaya, Satva, Nisyand, Kshira, Sara, Kshara, Arka, Lavana, Ushnodaka, Aushadha Siddha Udaka, Pramathya, Panaka, Mantha, Tarpana, Saktu
2. Churna, Gutika, Vatika, Modaka, Guggulu, Varti
3. Pathya Kalpana
4. Sneha Kalpana
5. Sandhan kalpana
6. Bahya Prayogartha Kalpana
7. Lepa, Upanaha, Malahara, Udvartan, Avadhupan, Abhyanga
8. Dhupan and Dhumrapan
9. Mukha, karna, Nasa and Netra Kalpana
10. Basti Kalpana

PAPER –III
Aushadha Yoga Vigyan

Bhaishajya Yoga Vigyan
Detailed knowledge of Aushadhi Path Samyojana, Therapeutic efficacy, Mechanism of action, Dose, Anupan and Method of administration of following Aushadhi Yogas:

1. Panchavidha Kashayas and their Upakalpa
Ardraka swarasa, Tulasi swarasa, Vasa putapaka swarasa, Nimba kalka, Rasona kalka, Kulattha Kwath, Punarnavasthaka kwatha, Rasna saptaka kwatha, Dhanyak hima, Sarivadi hima, Panchakola phanta, Mustadi pramathyaka, Kharjuradi mantha, Shadanga paniya, Laksha rasa, Ajamoda arka, Yavanyadi arka, Chincha panaka, Chandana panaka, Shatavari shankara, Banapsha shankara, Nimbu sarkara, Darvi rasakriya, Amrita satva, Ardraka satva, Arjuna kshirapaka, Rasona kshirapaka,

2. Pathya Kalpana – Yavagu, (Krita and Akrita), Ashtaguna manda, Laja manda, Peya, Vilepi, Krishara, Yusha, Mudga yusha, Kulattha yusha, Saptamushtika yusha, Khad, Kambalika, Raga, Shadava Mamsarasa, Veshavara, Takra, Udavita, Katvar, Mathita, Chhacchika, Dadhi, Tandulodaka, Neutraceuticals and Food Supplements

3. Churna
Sitopaladi Churna, Talisadi Churna, Triphala Churna, Hingvashtaka Churna, Yashtimadhu Churna, Avipattikara Churna, Swadishta Virechana Churna, Trimada Virechana Churna, Lavana Bhaskar Churna, Sudarshana Churna, MahaSudarshana Churna, Gandharva Haritaki Churna, Navayasa Churna, Pushyanuga Churna, Ajamodadi Churna, Hingvadi Churna, Eladi Churna, Dadimashtaka Churna, Trikatu Churna, Vaishwanara Churna

4. Gutika
Arogya vardhani vati, Chandraprabha vati, Chitrakadi Gutika,, Sanjivani Vati, Lasunadi vati, Lavangadi Vati, Vyoshadi vati, Khadiradi Vati, Kankayan Vati, Abhayadi modak, Marichyadi gutika, Amalakyadi gutika, Samshamini Vati, Kutaja Ghana vati
5. Guggulu

6. Snehapaka
Vasa sneha and Majja sneha nirman

**Sneha Moorchhana** - Ghrita Murchana, Taila Murchhana

**Siddha Ghrita** - Shatavari Ghrita, Jatyadi Ghrita, Phala Ghrita, Dadimadi Ghrita, Kshira Shatpala Ghrita, Triphala Ghrita, Dhanvantri Ghrita, Amritaprashra Ghrita, Kalyanaka Ghrita, Brahmi Ghrita, Changeri Ghrita, Panchatikta Ghrita, Sukumara Ghrita, Panchagavya ghrita.


7. Avaleha

8. Sandhan Kalpa
**Shukta** - Ikshu shukta, Tushambu, Kanjik, Sandaki

**Madya** - Sura, Shidhu, Varuni


**Rasa Yoga Vigyan**
Detailed knowledge of Aushadhi Patha Samyojan, Therapeutic efficacy, Mechanism of action, Dose, Anupan and Method of administration of following Aushadhi Yogas

10. Kharaliya Yoga

11. Loha Kalpa

12. Kupipakva Yoga
Rasa Sindura, Makaradhwaaja, Sidhamakaradhwaaja, Samirapannaga Swarnavanga, Malla sindura, Rasa karpura, Rasa pushpa, Manikya Rasa.

13. Parpati Yoga
Rasa Parpati, Loha Parpati, Tamra Parpati, Suwarna Parpati, Gagana Parpati, Vijay Parpati, Panchamrit Parpati, Shwet Parpati, Bola Parpati.

14. Pottali Yoga
Rasagarbhapottali, Hemagarbhapottali, Mallagarbha pottali, pottali, Hiranyakagrbha pottali, Shankhagarbha pottali, Lokanatha rasa, Mriganka Pottali.

PAPER - IV
Pharmaceutical Science
Pharmaceutical technology
1. Scope and Evolution of Pharmacy
2. Information Resources in Pharmacy and Pharmaceutical Science
3. Posology
4. Colloidal and Coarse dispersion and Pharmaceutical Rheology
5. Preformulation
6. Separation
7. Principles of Distillation, Methods of Extraction, Infusion, Decoction, Maceration, Percolation and Fusion
8. Sterilization & Sterile products, Ophthalmic and Parenteral Preparations
9. Preservation and stabilization of pharmaceutical products
10. Drying, Open and Closed Air drying, Freeze drying, Vacuum drying and other drying methods
11. Pharmaceutical Excipients
13. Semisolid Dosage Forms Emulsion, Suspensions and Extracts
15. Pharmaceutical aerosols
16. Topical drugs and Cosmetics
17. Packaging Materials and Labeling
18. Standardization of Raw material, In process Material and Finished Product

Pharmacology
19. Principles of Pharmacology
   Pharmacodynamics & Pharmacokinetics: Absorption, distribution, mechanism of action & Excretion, Dose response relationship, structure activity relationship
20. Routes of administration of drug
21. Factors modifying drug effect, Drug interactions, Adverse drug reaction and Drug toxicity
22. Detailed Knowledge of Pharmacovigilance – National and International Scenario. Pharmacovigillance of Ayurvedic Drugs
23. Clinical pharmacology: Preclinical & clinical evaluation, Bioavailability and Bioequivalence

Toxicology
24. Principles of Toxicology
25. Toxicology of Metallic, Mineral, Plant & Animal products
   General principles of Management of Acute and Chronic Toxicity
Scheme of Practicals

Duration: - 2 Years

I) Departmental Practicals :-
Student should prepare following Aushadhi Kalpanas / perform 100 practicals, (Any 100 out of 125) under the supervision of Guide and record the same in Practical Journal (Proforma of journal is attached herewith as Annexure A)

   a) Swaras Kalpana - 02
   b) Kalka Kalpana – 02
   c) Kwath Kalpana – 02
   d) Him Kalpana – 02
   e) Phant Kalpana – 02
   f) Kshir Paka Nirman – 02
   g) Panak Nirman – 02
   h) Mantha Nirman – 02
   i) Shadangodak Nirman – 01
   j) Tandulodak Nirman – 01
   k) Ghan Nirman – 02
   l) Khand Paka Nirman – 02
   m) Avaleha Nirman – 03
   n) Ghrit Nirman – 02
   o) Tail Nirman – 02
   p) Bhallatak Tail Patan – 01
   q) Laksha Ras Nirman – 01
   r) Pramathya Nirman – 01
   s) Asava Nirman – 05
   t) Arishta Nirman – 05
   u) Sidhu Nirman – 01
   v) Sura Nirman – 01
   w) Waruni Nirman – 01
   x) Shukta Nirman – 01
   y) Prasanna Nirman – 01
   z) Jagal Nirman – 01
   aa) Medak Nirman – 01
   bb) Sura Bij Nirman – 01
   cc) Maireyak Nirman – 01
   dd) Chukra Nirman – 01
   ee) Sandaki Nirman – 01
   ff) Guggul Shodhan – 01
   gg) Guggul Kalpa Nirman – 08
   hh) Gutika Nirman – 10
   ii) Churna Nirman – 05
   jj) Lavan Nirman – 02
   kk) Mashi Nirman – 02
   ll) Lepa Nirman – 02
   mm) Malhar Nirman – 02
   nn) Upanah Nirman – 01
   oo) Kshar Nirman – 03
   pp) Kshar Sutra Nirman – 03
   qq) Basti Dravya Nirman – 05
   rr) Netra Bindu Nirman – 02
   ss) Anjan Nirman – 02
   tt) Shodhana of Visha, Upvisha and Dravyas – 12
   uu) Preparation of Ahar Kalpana – 10
II) Research Project: (other than Dissertation)
Student should work on a specific topic related to Bhaishajya Kalpana as allotted by Guide as per instructions and format provided in the P.G. Log Book

III) Compilations:
Student should prepare Compilations on a specific topic related to Ayurvedic and Modern advances in Pharmacy / Bhaishajya Kalpana as allotted by Guide as per instructions provided in the P.G. Log Book.

IV) Clinical Case Study: (Desirable)
Student should study 15 cases and record the case in prescribed format (attached herewith as Annexure B) as per instructions provided in PG Log Book.

V) Drug Testing and Drug Standardization L:
Student should perform any 18 practicals using available tests at department from following list, but at least two should be performed from each group.

A) Experiments for chemical analysis
   a) Determination of Foreign matter
   b) Determination of Moisture %
   c) Determination of Ash value, ash analysis
   d) Chromatography
   e) Spectrophotometric finger printing

B) Oils & Fats testing
   a) Specific gravity
   b) Refractive index
   c) Estimation of Iodine value
   d) Saponification value
   e) Acid value

C) Tests for preparations like asavas, aristas, tablets etc
   a) Determination of pH value
   b) Determination of Alcohol content of Asavas and Arista
   c) Determination of Sugar content of Asavas and Arista
   d) Test for aflotoxine
   e) Determination of Viscosity (Oswald’s viscometer)
   f) Determination of Specific gravity
   g) Determination of Disintegration time for tablets
   h) Hardness test for tablets
   i) Friability test for tablets

VI) Academic Visits
The brief report of each visit should be written by student in a journal (Duly signed by Guide and HOD)
   a) Visit to one Local Ayurvedic Pharmacy (GMP Approved)
   b) Visit to one State Ayurvedic Pharmacy (GMP Approved)
   c) Visit to one out of State Ayurvedic Pharmacy (GMP Approved)
   d) Visit to one R&D Centre of Modern Pharmacy (MNC) such as Glaxo, Pfizer, FDA Laboratory etc.
   e) Desirable (Winery, confectionary industries etc.)
PROFORMA
Practical Journal Proforma

Practical No: ___________ Date: ___________
Practical name: ______________________________ Time: ___________
Reference: 
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Equipments: ____________________________________________________________
____________________________________________________________________
____________________________________________________________________

Required Drugs:

<table>
<thead>
<tr>
<th>No</th>
<th>Drug Name</th>
<th>Quantity</th>
<th>Cost</th>
<th>No</th>
<th>Drug Name</th>
<th>Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>6</td>
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</table>

Method: ______________________________________________________________
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Procedure: _____________________________________________________________
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Observations: __________________________________________________________
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Precautions: ____________________________________________________________
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Final Processed drug: Weight

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
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</tbody>
</table>

Change in weight due to _________________________________________________________

Examination of the Processed Kalpa:

1) Shabda : ______________________________________________________________

2) Sparsha : ______________________________________________________________

3) Rupa : ________________________________________________________________

4) Rasa : ________________________________________________________________

5) Gandha : ______________________________________________________________

Kalpa Siddhi Lakshanas: _______________________________________________________

Standardization as per Modern Technology:

Properties of the final Kalpa: -

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

Therapeutic indications:

<table>
<thead>
<tr>
<th>No</th>
<th>Disease</th>
<th>Action</th>
<th>Dose</th>
<th>Anupan</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
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</tbody>
</table>

Any other uses : ______________________________________________________________

Saviryatavadhi of the drug : ____________________________________________________

Cost estimation:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material</td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
</tr>
<tr>
<td>Labor charges</td>
<td></td>
</tr>
<tr>
<td>Packaging charges</td>
<td></td>
</tr>
</tbody>
</table>

Label:

<table>
<thead>
<tr>
<th>Drug name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Dose</td>
<td></td>
</tr>
<tr>
<td>Special note</td>
<td></td>
</tr>
<tr>
<td>Mfg. Date</td>
<td></td>
</tr>
<tr>
<td>Expiry date (if any)</td>
<td></td>
</tr>
</tbody>
</table>

Date
Signature of Student

Date
Signature of Guide
PROFORMA
Clinical Case Study

STUDY TITLE: Assessment of & confirmation of mode of action

SUBJECT NO: ______________________________________________________

SUBJECT NAME: ______________________________________________________

AGE: ______________________________________________________

SEX: ______________________________________________________

OCCUPATION: ______________________________________________________

ADDRESS: ______________________________________________________

DATE OF FIRST VISIT: ______________________________________________________

INFORM CONSENT FORM: ______________________________________________________

PAST HISTORY/POORVA ROOPA: ______________________________________________________

CHIEF COMPLAINTS/ROOPA: ______________________________________________________

INCLUSION CRITERIA: ______________________________________________________

EXCLUSION CRITERIA: ______________________________________________________

VISIT FIRST: ______________________________________________________

DATE OF VISIT: ______________________________________________________

A) PHYSICAL EXAMINATION

<table>
<thead>
<tr>
<th>SR. No</th>
<th>Body system</th>
<th>ND</th>
<th>Normal</th>
<th>If Abnormal</th>
<th>Abnormality in brief</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Head, Eyes, Ears, Nose, Throat</td>
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<tr>
<td>3</td>
<td>Respiratory</td>
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<td>4</td>
<td>Cardiovascular</td>
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<tr>
<td>5</td>
<td>Gastrointestinal</td>
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<tr>
<td>6</td>
<td>Neurological</td>
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<td>7</td>
<td>Lymphatic</td>
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<td>8</td>
<td>Musculoskeletal</td>
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<tr>
<td>9</td>
<td>Urogenital</td>
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<tr>
<td>10</td>
<td>Other (Specify)</td>
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</tr>
</tbody>
</table>
ND: Not Done, NCS: Not Clinically Significant, CS: Clinically Significant (If abnormal CS, enter in medical History)

### B) SCREENING VISIT

VITAL SIGNS (in supine position after 3 min. rest)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>ND</th>
<th>Value</th>
<th>Normal</th>
<th>If abnormal</th>
<th>Abnormality in brief</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Blood pressure(mmHg)</td>
<td></td>
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<tr>
<td>2.</td>
<td>Heart rate(bpm)</td>
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<tr>
<td>3.</td>
<td>Body temperature(ºF)</td>
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<tr>
<td></td>
<td>Oral</td>
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<td>Axillary</td>
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<td>4.</td>
<td>Respiration Rate/(min)</td>
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</tbody>
</table>

ND: Not Done, NCS: Not Clinically Significant, CS: Clinically Significant (If abnormal CS, enter in medical History)

VYADHI PRAKRITI : ________________________________________________
RUGNAPRAKRITI : ________________________________________________
DOSHA : _________________________________________________________
DUSHYA : _________________________________________________________
BALA : _________________________________________________________
KAAL : _________________________________________________________
VAYA : _________________________________________________________
AGNI : _________________________________________________________
PRAKRITI : _____________________________________________________
SAAR : _________________________________________________________
SATVA : _________________________________________________________
SATMYA : _________________________________________________________
AHARSHAKTI : _________________________________________________
VVAYAMSHAKTI : _______________________________________________
NIDAAN : _______________________________________________________ 
AAHARJANYA : _________________________________________________
VIHARJAYNYA : _________________________________________________
VVYASANJANYA : ________________________________________________
AUSHADHIJANYA : ______________________________________________
VVYADHIJANYA : ________________________________________________
KAALJANYA : _________________________________________________
KULAJANYA : _________________________________________________
**C) 12 LEAD ECG  (in supine position after 5 min)**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>Value</th>
<th>Normal</th>
<th>If abnormal</th>
<th>Abnormality in brief</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NCS</td>
<td>CS</td>
</tr>
<tr>
<td>1.</td>
<td>Qtc(msec)</td>
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<tr>
<td>2.</td>
<td>QTcB(msec)</td>
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<tr>
<td>3.</td>
<td>Overall interpretation</td>
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<td>of ECG</td>
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</tbody>
</table>

**ND:** Not Done, **NCS:** Not Clinically Significant, **CS:** Clinically Significant (If abnormal CS, enter in medical History)

**D) CHEST X-RAY**

<table>
<thead>
<tr>
<th>Examination</th>
<th>ND</th>
<th>Normal</th>
<th>If abnormal</th>
<th>Abnormality in brief</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>NCS</td>
<td>CS</td>
</tr>
<tr>
<td>Chest X-ray</td>
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</tbody>
</table>

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**E) HEMATOLOGY:**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>ND</th>
<th>Normal</th>
<th>If abnormal</th>
<th>Abnormality in brief</th>
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<tr>
<td></td>
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<td>NCS</td>
<td>CS</td>
</tr>
<tr>
<td>1.</td>
<td>WBC</td>
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</tr>
<tr>
<td>2.</td>
<td>RBC</td>
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</tr>
<tr>
<td>3.</td>
<td>Haemoglobin</td>
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<tr>
<td>4.</td>
<td>MCV</td>
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<tr>
<td>6.</td>
<td>MCH</td>
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<tr>
<td>7.</td>
<td>MCHC</td>
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<tr>
<td>8.</td>
<td>Platelets</td>
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<tr>
<td>9.</td>
<td>WBC differential count</td>
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</tr>
<tr>
<td>9.a</td>
<td>Neutrophils</td>
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<td></td>
</tr>
<tr>
<td>9.b</td>
<td>Lymphocytes</td>
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</tr>
<tr>
<td>9.c</td>
<td>Monocytes</td>
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</tr>
<tr>
<td>9.d</td>
<td>Eosinophils</td>
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<td></td>
</tr>
<tr>
<td>9.e</td>
<td>Bosophils</td>
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</tbody>
</table>

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**F) URINE ANALYSIS:**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>ND</th>
<th>Normal</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>NCS</td>
</tr>
<tr>
<td>1.</td>
<td>Protein</td>
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</tr>
<tr>
<td>2.</td>
<td>Glucose</td>
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</tr>
<tr>
<td>3.</td>
<td>Ketones</td>
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</tr>
<tr>
<td>4.</td>
<td>Blood</td>
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</tr>
<tr>
<td>5.</td>
<td>Bilirubin</td>
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</tr>
<tr>
<td>6.</td>
<td>Urine Microscopy</td>
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</tr>
<tr>
<td>6.a</td>
<td>Pus cells</td>
<td></td>
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</tr>
<tr>
<td>6.b</td>
<td>RBC</td>
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<tr>
<td>6.c</td>
<td>Casts</td>
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</tbody>
</table>

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**G) LIPID PROFILE**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>ND</th>
<th>Normal</th>
<th>If abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NCS</td>
</tr>
<tr>
<td>1.</td>
<td>Total cholesterol</td>
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<td></td>
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</tr>
<tr>
<td>2.</td>
<td>Triglycerides</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>HDL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>LDL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>VLDL</td>
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</tr>
</tbody>
</table>

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**DIAGNOSIS:** _______________________________________________________

**MEDICATION DETAILS:** _____________________________________________

**SOURCES:** _______________________________________________________

**INGREDIENTS:** _________________________________________________

**MANUFACTURING METHOD:** _________________________________________

**TEST DETAILS-Physical/Analytical:** ________________________________

**BATCH NO:** ____________________________________________________

**H) MANUFACTURING DATE**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Ingredients</th>
<th>Pharmaceutical value</th>
<th>Therapeutic value</th>
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<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>1.</td>
<td>Mercury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Sulphur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Copper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Iron</td>
<td></td>
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</tr>
<tr>
<td>5.</td>
<td>Aluminium</td>
<td></td>
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</tr>
<tr>
<td>6.</td>
<td>Zinc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Arsenic</td>
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</tbody>
</table>
## I) ADVERSE DRUG REACTION IF ANY

<table>
<thead>
<tr>
<th>SR. NO</th>
<th>Mercury</th>
<th>Arsenic</th>
<th>Lead</th>
<th>Copper</th>
<th>Zinc</th>
<th>Iron</th>
<th>Calcium</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Metallic Taste</td>
<td>Acute G.I disturbances</td>
<td>Same as of arsenic except diarrhea is replaced by constipation</td>
<td>Metallic Taste</td>
<td>G.I disturbance</td>
<td>Nausea</td>
<td>Reduce bone mass</td>
</tr>
<tr>
<td>2.</td>
<td>Throat constriction</td>
<td>Nausea</td>
<td>Dry throat</td>
<td>Salivation</td>
<td>Metallic taste</td>
<td>Vomiting</td>
<td>Osteoprosis</td>
</tr>
<tr>
<td>3.</td>
<td>Burning sensation from mouth to stomach</td>
<td>Burning in G.I tract</td>
<td>Metallic astringent taste</td>
<td>Thirst</td>
<td>Gullet</td>
<td>Diarrhoea</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Radiating pain over Abd.</td>
<td>Severe, continuous and persisting vomiting</td>
<td>Thirst</td>
<td>Burning in stomach</td>
<td>Vomiting</td>
<td>Constipation</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Corrosion of mouth, tongue, faeces</td>
<td>Diarrhoea</td>
<td>Nausea</td>
<td>Colicky abdominal pain</td>
<td>Diarrhoea</td>
<td>Iron overload with organ damage</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Mucous membrane appears grayish white</td>
<td>Intense thirst</td>
<td>Colicky pain</td>
<td>Vomitting</td>
<td>Collapse</td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>Nausea</td>
<td>Cramps in legs</td>
<td>Vomitting</td>
<td>Diarrhoea</td>
<td>Destruction of mucus membrane of mouth</td>
<td></td>
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</tr>
<tr>
<td>8.</td>
<td>Vomiting with stringy mass of bloody white mucous</td>
<td>Oligouria</td>
<td>Purging</td>
<td>Collapse</td>
<td>Bloody purging</td>
<td></td>
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<tr>
<td>9.</td>
<td>Profuse bloody purging</td>
<td>Skin eruption in later stage</td>
<td>Offensive black faeces</td>
<td>Liquid brown stool</td>
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<tr>
<td>10.</td>
<td>Painful tenesmus</td>
<td>Cramps</td>
<td>Inky appearance of urine</td>
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<tr>
<td>11.</td>
<td>Cardiorespiratory arrest</td>
<td>Headache drowsiness</td>
<td>Oligouria</td>
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<tr>
<td>No.</td>
<td>Condition</td>
<td>Severe headache</td>
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<tr>
<td>12</td>
<td>Paralysis</td>
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<td>13</td>
<td>Encephalopathy</td>
<td>Dyspnoea</td>
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<tr>
<td>14</td>
<td>Sleeplessness</td>
<td>Jaundice</td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td>Hallucination</td>
<td>Muscle cramp</td>
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<tr>
<td>16</td>
<td>Excitement</td>
<td>Convulsion</td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>Delerium</td>
<td>Coma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Tremors of eyes, mouth and fingers</td>
<td></td>
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</tr>
</tbody>
</table>

WHO Scaling for ADR: ____________________________________________________

Temporal Relationship: _______________________________________________

Concomittant Disease: _______________________________________________

Concomittant Drug: _________________________________________________

Causative Dechallenge: ______________________________________________

Causative Rechallenge: ______________________________________________

Comments: _________________________________________________________

Sign. of Student: ___________________________  Sign. of Guide: __________

Date: __________  Date: __________
Format of Question Paper

For All Four Papers

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Nature of Questions</th>
<th>Division of Marks</th>
<th>Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One Long Answer Question (LAQ)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>One Long Answer Question (LAQ)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>One Long Answer Question (LAQ)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>One Long Answer Question (LAQ)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Five SAQ (Attempt Any Four)</td>
<td>4x5</td>
<td>20</td>
</tr>
</tbody>
</table>

Total: 100

Format of Practical / Oral Examination

a) Log book                                      - 20
b) All Practical Journals                        - 10
  c) One Long experiment                          - 20
d) Two Short experiments (10x2)                  - 20
e) Drug testing practical (any one)              - 10
  f) Spotting on Instrument/Equipment/Drugs (10 Spots x2) - 20
g) Viva-Voce/Oral by Four Examiners              - 100 Marks

Total: 200 Marks

Reference Books

1. Relevent parts of Charak, Sushrut, Vagbhata and Sharngadhar
2. Bheshaj Kalpa
3. Bhavaprakash
4. Siddha Bhaishajya Manimala
5. Bhaishajya Ratnavali
6. Ayurvediya Aushadhi Karana – Puranika and Dhamanakar
7. Rasa Bhaishajya Kalpana Vigyan – Santosh Khandal
8. Bharat Bhaishajya Ratnakar
9. Vaidyaka Paribhasha Pradeepa
10. Kriyatmak Aushadhi Parichaya Vigyan
11. Dravyaguna Vijnan Pat-1 and 2 – Yadavji Trikamji Acharya
12. Dravyaguna – Chakradatta CCRAS Publication
13. Remington: Science and Practice of Pharmacy
14. Industrial Pharmacy – Lackman
15. Text Book of Pharmacology – Goodman and Gilman
16. Data Base of Medicinal Plants – CCRAS Publication
17. Quality and Standards of Medicinal Plants – ICMR publication
18. Quality Control of Ayurvedic Drugs – PLIM, Gaziabad publication
19. Ayurvedic Pharmacopeia of India
20. Ayurvedic Formulary of India
21. Indian Pharmacopeia
22. British Pharmacopeia
23. United States Pharmacopeia
24. Pharmacopeia Codex
25. Current Good Manufacturing Practices
26. Drugs and Cosmetic Act 1940 and Rules 1945
27. Drugs and Magic remedies (Objectionable advertisement) Act-1954
28. Prevention of Food Adulteration (PFA) act
29. Laws pertaining to Narcotics
30. Factory and Pharmacy Acts
32. Siddha Yoga Samgraha – Yadavaji Trikamji Acharya
33. Sahasrayoga
34. Parad Yoga Chintamani – Vd. Ramesh C. Wavare
35. Bhaishajya Kalpana – Vd. Omprakash Talokar
36. Bhaishajya kalpana by Dr. Ramchandra Reddy
37. Ayurved sara Sangraha - Baidyanath Publication
38. Siddha Bhesaj Manimala.