

वी.पी. कोइराला मेमोरियल क्यान्सर अस्पताल
प्राविधिक अन्य सेवा, हस्पिटल इन्जिनियरिङ्ग समुह, वायोमेडिकल उपसमुह, सहायक चौथो तह, जुनियर असिष्टेण्ट
पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

प्रथम चरण (First Phase) : लिखित परीक्षा

Paper	Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time Allowed
I	Technical Subject & Organizational Knowledge	100	40	50× 2= 100 (Objective Multiple Choice Questions)	45 minutes
II		100	40	12× 5 = 60 4 × 10 = 40 (Subjective Descriptive Type)	2.30 hrs

द्वितीय चरण (Second Phase)

Subject	Full Marks	Examination
Interview	30	Oral

द्रष्टव्य :

- यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई भागमा विभाजन गरिएको छ ।
- प्रथम र द्वितीय पत्रको पत्रको विषयवस्तु एउटै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कटौत गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कटौत पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A,B,C,D मा लेख्नुपर्नेछ । सानो अक्षर (Small letter) a,b,c,d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र /विषयमा दिइए अनुसार हुनेछ ।
- परीक्षामा परीक्षार्थीले मोबाइल वा यस्तै प्रकारका विद्युतीय उपकरण परीक्षा हलमा लैजान पाइने छैन ।
- विषयगत प्रश्न हुने पत्रका हकमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डको उत्तरपुस्तिकामा लेख्नुपर्ने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :- २०७८/०९/१४

Paper I & II : - Technical Subject & Organizational Knowledge

Section (A): 45 % Marks

1. **Human Physiology and Biomedical Instrumentation**
 - 1.1 Introduction to Basic Physiology : nervous system, respiratory system, circulatory system, digestive system and excretory system
 - 1.2 Physiological Signals Monitoring : ECG, EMG, EEG, Pulse Oxymeter, Temperature Meter and Blood Pressure Meter
 - 1.3 Physical Therapy : Diathermy, Hydrotherapy, Traction & TMT unit
 - 1.4 ENT : Audiometers, Tympanometers, ENT icroscope, ENT Drill and Autoscope
 - 1.5 Imaging Systems
 - 1.7.1 X-ray: introduction and working principle
 - 1.7.2 General introduction to MRI and CT
 - 1.6 Hospital Gas Supply
 - 1.8.1 Medical Gas: introduction and classification
 - 1.8.2 Oxygen Concentrator: introduction and working
 - 1.7 Dialysis: General introduction and working principle
 - 1.8 Basic Laboratory Equipments: introduction and working principle (water bath, hot air oven and autoclave)
 - 1.9 OT Light
2. **Biomedical Chemistry**
 - 2.1 Electrochemistry
 - 2.1.1 Introduction and range of electrochemical techniques
 - 2.1.2 Classification of electrochemical techniques: Potometry and Voltmetry
 - 2.2 Organic Chemistry : introduction, classification and general uses of organic compounds
 - 2.3 Carbohydrates, Proteins and Lipids : definition, classification and properties
 - 2.4 Instrumental methods for analysis of biologically important substance : Electrophoresis, Chromatographic, Mass spectrometric, Centrifugation, Filtration and Colorimetric techniques
 - 2.5 Acid-Base Chemistry
 - 2.5.1 pH, buffer and buffer systems
 - 2.5.2 Electrolysis and water dissociation
3. **Electronic Principles and Practices**
 - 3.1 Circuit Parameters: introduction
 - 3.2 AC and DC circuits: introduction and analysis
 - 3.3 Transistors: introduction and classification (BJT, JFET, MOSFET)
 - 3.4 Power Supplies, Voltage Regulators and IC Regulators
 - 3.4.1 Introduction and characteristics
 - 3.4.2 Rectifiers, filters, voltage regulation and switching regulation
 - 3.5 Amplifiers
 - 3.5.1 Introduction, characteristics, ideal amplifier and differential amplifier
 - 3.5.2 Operational Amplifier: introduction, characteristics and application
 - 3.6 OptoElectronic Components
 - 3.6.1 General introduction
 - 3.6.2 Photoconductive cells, Photodiodes, Phototransistors, Solar cells, Light activated SCR, Light Emitted Diodes (LEDs), Optocouplers and Liquid Crystal Displays (LCD)

Section (B): 45 % Marks

4. **Digital Electronics and Microprocessors**
 - 4.1 Fundamental of Digital Electronics
 - 4.1.1 Transistor: application as switch and relay
 - 4.1.2 Logic Gates: truth tables and Boolean expressions
 - 4.1.3 Universal gates and gate conversion
 - 4.1.4 DeMorgan's theorem
 - 4.2 Combinational Logic Devices
 - 4.2.1 Encoder and Decoder
 - 4.2.2 Multiplexer and Demultiplexer
 - 4.2.3 Half and Full: Adder and Subtractor
 - 4.3 Sequential Logic Devices
 - 4.3.1 Counters: types and characteristics
 - 4.3.2 Registers: SISO, SIPO, PISO, PIPO
 - 4.3.3 Digital clocks and frequency counter
5. **Computer Skills**
 - 5.1 Introduction to computer
 - 5.2 Input, output and memory devices
 - 5.3 Internet and information resources
 - 5.4 Networking concepts
6. **Record keeping and Technical Writing**
 - 6.1 Introduction to record keeping and technical writing
 - 6.2 Creating forms, memos, letters and daily reports
 - 6.3 Computerized inventory and maintenance report
7. **Patient and Hospital Environment**
 - 7.1 Procurement procedures
 - 7.2 Biomedical waste management
8. **Maintenance and Repair for Biomedical Devices**
 - 8.1 Working Tools and Testing Equipments: General Handling Tools, Oscilloscopes and Multimeters
 - 8.2 Electrical Safety Inspections
 - 8.3 General Equipment Maintenance : Blood pressure machine, Suction machine, Stethoscope Syringe and Infusion pump

Section (C): 10 % Marks

9. **Organizational Knowledge and General Health Issues**
 - 9.1 B.P.Koirala Memorial Cancer Hospital : History, organizational structure, functions, roles, services, problems and challenges
 - 9.2 National Health Policy
 - 9.3 B.P.Koirala Memorial Cancer Hospital related act and regulations
 - 9.4 Health Service Act, 2053 and Health Service Regulation, 2055
 - 9.5 Professional council related acts and regulations
 - 9.6 Professional and medical ethics
 - 9.7 Cancer Registry: Hospital and Community Based Cancer Registry