

लोक सेवा आयोग
नेपाल इञ्जिनियरिङ्ग सेवा, मेटेरियोलोजी समूह, राजपत्र अनंकित प्रथम श्रेणी मौसम विज्ञान
सहायक पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

परीक्षाको योजना (Examination Scheme)

भाग	परीक्षा	समय	प्रश्न संख्या	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली
१	लिखित	४५ मिनेट	५०	१००	४०	वस्तुगत बहुउत्तर
२.	अन्तर्वार्ता			२०		मौखिक

द्रष्टव्य :-

- (१) पाठ्यक्रममा भएका यथासम्भव सबै पाठयाँशहरूवाट प्रश्न सोधिनेछन् ।
- (२) गल्ती गरेको प्रश्नोत्तरका लागि २०% अंक कट्टा गरिनेछ ।
- (३) लिखित परीक्षावाट छनौट भएकाहरूलाई मात्र अन्तर्वार्तामा समावेश गराइनेछ ।
- (४) पाठ्यक्रम लागु हुने मिति २०६१।४। १५ गते

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समय :- ४५ मिनेट

प्रश्न संख्या :- ५०

पूर्णाङ्क :- १००

1. General Meteorology

- **Composition of the atmosphere:** Dry air; atmospheric ozone; water vapour; carbon dioxide; thermosphere; interplanetary gas;
- **Vertical Division of Atmosphere:** Troposphere; stratosphere; mesosphere; thermosphere; ionosphere; exosphere;
- **Heat exchange processes in the atmosphere:** Solar and terrestrial radiation; conduction and convection; advection; temperature difference between land and sea surfaces;
- **Air temperature:** Basic principles of temperature measurement; Celsius; Fahrenheit and Kelvin; temperature scales; thermographs; measurement of air temperature; exposure; horizontal and vertical variations of air temperature in troposphere, tropopause and stratosphere;
- **Atmospheric pressure:** Nature; units; measurement; the mercury barometer, its principle, setting up and handling; corrections for standard condition; the aneroid barometer; the barograph; horizontal and vertical variations in the pressure; reduction of pressure to sea level; the ICAO standards atmosphere; the barometer used as an altimeter;
- **Moist air:** The three states of water, solid, liquid and gaseous; density; water vapour pressure, saturation vapour pressure; evaporation; condensation; freezing; sublimation, isobaric and adiabatic processes; latent heat;
- **Moisture indicators:** Relative humidity; mixing ratio and dew point; water vapour pressure.
- Elementary theory of wet-bulb thermometer; principles of the psychrometer and the hygrometer.
- Rudiments of cloud, fog and precipitation formation; visibility; the influence of water vapour, of water drops and dust (aerosols)

2. Meteorological instruments and methods of observation

Surface Observation

- **Sunshine recorder:** Location and orientation of the instrument; types of charts used; measurement of sunshine duration;
- **Thermometers for measuring the temperature of the air:** Mercury thermometers and alcohol thermometers; maximum and minimum thermometers; observation hours; correction; bimetallic thermometers; meteorological screens types and orientation; thermographs; calibrating corrections;
- Thermometers measuring ground temperature at 10, 20 and 50 cm depth observation hours;
- **Mercury barometers:** Fortin and kew; index, gravity and height correction and reduction of the readings to mean sea level; use of correction tables; barograph; calibration;

- **Psychrometer:** Principle; maintenance; reading of thermometers; use of psychrometric tables, relative humidity and dew point; computation of dew point; coding; hygrograph; diagrams; calibrations; correction;
- **Evaporation:** Principle; maintenances; reading; evaporation pan;
- **Surface wind measurement:** Wind speed; units; method of observing wind direction; method of obtaining wind speed; types of anemometers; anemographs; gustlines; squalls; coding of wind direction and wind speed;
- **Direct measuring rain gauge and snow gauge:** Procedures; recording rain gauge; rainfall curves;
- **Visibility:** Horizontal visibility; measured by estimation or rising landmarks in the day time and light source at night; observed visibility; oblique and vertical visibility;
- **Cloud:** International classification of cloud (WMO) general; species and variety of cloud; orographic clouds and special clouds; clouds amount; height of cloud base;
- **Hydrometeors:** Rain; supercooled rain; drizzle; supercooled drizzle; snow grains; snow pellets; ice crystal, hail; small hail; ice pellets; fog; mist; rime; glaze; spout;
- **Lithometeors:** Haze; dust haze; smoke; drifting and blowing dust or sand; dust storm or sand storm;
- **Principal forms of precipitation and cloud associated with them:** Cloud systems; present weather and past weather;

3. **Climatology**

a. **General climatology**

- Definition of climate; branches of climatology (physical, dynamic, synoptic); climatic elements (temperature, precipitation, humidity, wind speed and wind direction, visibility, sky cover, sunshine radiation etc).

b. **Climatic controls**

- Natural influence on climate (latitude, relief, altitude, water, ice and snow); man's effect on climate.

c. **Statistical methods**

- Computation and use of mean, median mode and standard deviation; compiling data into tables; constructing graphs; plotting on to the maps.

4. **Surface Weather Reports:**

- International meteorological codes; surface synoptic reports from land stations; coding procedures for SYNOP code form; coding procedure for upper air code form; surface climatological reports; plotting surface and upper air data;

5. **Aeronautical Meteorology**

- Meteorology of aircraft operation; METAR/ SPECI reports; radiosondes; pilot balloon;

6. **Station Network**

- Installation of meteorological station; inspection of meteorological stations

Model questions

1. The process in which exchange of heat with environment does not takes place is called:
- a) Isolaric process
 - b) Pseerdo - aliabtic process
 - c) Radiative process
 - (d) Adiabatic process

Ans: (d)

2. In 1962, the WMO decided to describe the atmospheric by dividing it into four regions. These are:
- a) The Troposphere, The Stratosphere, The Inosphere and The Mesosphere
 - b) The Troposphere, The Stratosphere, The Mesosphere and The Hydrosphere
 - c) The Troposphere, The Stratosphere, The Mesosphere and The Thermosphere
 - d) The Troposphere, The Stratosphere, The Mesosphere and The Lithosphere

Ans: (c)

3. Temperature increase with altitude for some distance in the verticle is referred to as:
- a) Temperature inversion
 - b) Temperature advection
 - c) Temperature convection
 - d) Temperature conduction

Ans: (a)

4. The evaporation rate from the pan:
- a) is faster than evaporation rate from the take
 - b) is same as the evaporation rate from the lake
 - c) is less than the evaporation rate from the lake
 - d) none of the above

Ans: (b)

5. A SYNOP report from land station is identified by the symbolic letters:
- a. AAXX
 - b. BBXX
 - c. AAAA .
 - d. BBBB

Ans: (a)