भारत मौसम विज्ञान विभाग

सूचना संचार एंव उपकरण प्रशिक्षण केंन्द्र, नई दिल्ली

(विश्व मौसम संगठन का क्षेत्रीय प्रशिक्षण केंन्द्र, नई दिल्ली)

Advance Training Course in Meteorological Instrumentation
&
Information System (B – X)

Date: 31.08.2022 **Final Examination** **Max. Marks -100**

Paper-II **Time: - 10:30 AM - 13:30 PM**

A. Operation & Maintenance of various weather radar.

1. Fill in the blanks: Answer any 4. Marks: 1X4 = 4

    i. _____products from Doppler Weather radars are useful for aviation safety.
    ii. Generally Electro-magnetic waves in radar are_____polarized.
    iii. _____ band DWR is used as a storm detection radar.
    iv. _____ is a forecasting technique valid for 2 to 4 hours duration.
    v. When CB cells are aligned in a long row nearly continuously it is known as_____.

2. Indicate True or False with justification: Answer any 3. Marks: 2X3 = 6

    i. RF used in Polarimetric radars is circularly clockwise polarized.
    ii. In case of cloud echoes, back-scattering cross section is equal to the area of the cloud intercepting the radar beam.
    iii. Zero Watt power is equal to 0 dBm in logarithmic scale.
    iv. DWRs take a photograph of cloud and present it as Reflectivity product image.

B. RADAR Meteorology.

1. Fill in the blanks: Answer any 7. Marks: 1X7= 7

    i. IMD has installed a number of S-band Radars in entire coastline to observe and track ....
    ii. If the bright colour patch (dBZ> 40) is seen in max Z product of any Doppler Weather Radar up to 8 km height, the cloud being observed is most probably ....cloud
    iii. The most common wavelength used for RF transmission in C-band Radars is .... Centimeter.

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iv. Doppler Weather Radars have benefit over the conventional Radars due to it's .... product.

v. .... scattering approximation is used in Weather Radars detecting precipitation.

vi. A Radar antenna is generally a parabolic dish antenna that is very sensitive with .... gain.

vii. Presentation of longer range echoes in shorter range displays are known as .... folded echoes.

viii. ....is a process of bending of electro-magnetic radiation while travelling between two media of different refractive index.

2. Indicate True or False with justification: Answer any 5.   Marks: 2X5 = 10

   i. S-band radar are economic than C-band radar.
   ii. Bounded weak echo region is due to updraft in Thunderstorm
   iii. The number of pulses transmitted in one second of time is known as Pulse repetition interval (PRI).
   iv. The average angular width of the radar beam between two half power points on either side of the axis of the beam is called Antenna Aperture.
   v. If the back scattering cross-section area of large targets is equal to their physical size, it is known as Rayleigh Scattering.
   vi. The lower the PRF, the larger is the un-ambiguous range of the radar
   vii. Radial velocity indicates the velocity sensed by the radar antenna in its direction. It always gives a Sine component of the actual wind if there is an angle between the wind and antenna.

3. Write short note: Answer any 1.   Marks: 3X1 = 3

   i. What is Doppler Dilemma?
   ii. Explain the IMD Radar scan strategy?

C. Radar Technology.

1. Fill in the blanks: Answer any 4.   Marks: 1X4 = 4

   i. The mode of propagation in Co- axial cable is ....
   ii. The Magnetic force on a charged particle is given by the formula...............
   iii. The pulse width of long pulse is........................
   iv. The aggregation phenomena of electrons in Klystron tube is called................
   v. For Cyclone detection _____ (X- Band,/S-Band,/C-Band) used.

2. Please Explain in brief: Answer any 3.   Marks: 2X3 = 6

   i. Define Super refraction and Sub Refraction.
   ii. Explain In-field and Cross –field Microwave Tubes. Give example of each type.
   iii. Explain the significance of Duplexer.
   iv. Explain the various types of Polarization.

D. Meteorological Communication Systems.

1. Fill in the blanks.   Marks: 1X7 = 7

    i. SADIS is abbreviation of _____.
    ii. Compression and decompression techniques are used in Video Conference to _____.
    iii. The no. of components in WIS are _____.
    iv. BUFR means _____.
    v. AFTN is the short form of _____.
    vi. AFTN Address has _____ characters
    vii. At RTH/AMSS bulletin transmission at scheduled times is managed by _____.

2. Indicate True or False with justification: Answer any 5.   Marks: 2X5 = 10

    i. RTH has direct link with Tokyo.

    ii. It is not possible to convert SYNOP to BUFR message.
    iii. From Routing Catalogue, it is possible to know the source of message.
    iv. CIPS is installed at each RMC.
    v. There are several NCs connected with GISC.

    vi. Public Weather System (PWS) is used to store data.

3. Write short note: Answer any 1.   Marks: 3X1 = 3

    i. Give brief description of PWS.
    ii. Describe Clisys.

E. Introduction to HTML and PHP, GIS Platform and Development.

1. Fill in the blanks: Answer any 4.   Marks: 1X4 = 4

    i. PHP is ………………..server side scripting language.
    ii. XML is a markup language much like…..
    iii. PHP is acronym for………….
    iv. JavaScript is……………language?(Interpreted/Compiled)
    v. The extension of CSS file is ………

2. Answer the questions: Answer any Three.   Marks: 2X3 = 6

    i. List three ways to include CSS in the webpage?

    ii. What is web server?

    iii. How to create a hyperlink in HTML?

    iv.   Give a list of different types of Selectors in CSS?

3. Indicate True or False with justification: Answer any Two.   Marks: 2X2 = 4

    i.   PHP doesn't support database?
    ii.   JavaScript is a case sensitive language.
    iii.   Do all HTML tags have an end tag?

4. Answer the questions: Answer any Two   Marks: 3x2 = 6

    i.   What is PHP and its uses? Describe briefly.
    ii.   Discuss two types of data models in GIS?
    iii.   Briefly discuss the feature of JavaScript.

F. Linux and server Management.

1. Fill in the blanks: Answer any 4.   Marks: 1X4 = 4

    i.   SWAP partition can be ------GB if RAM is 2GB.
    ii.   The hidden files are preceded with --------in file list.
    iii.   Home directory of all ordinary users by default is -----------.
    iv.   Only------------- is allowed to execute user mod command.
    v.   ------------ is responsible for memory, process, and file management in Linux.

2. Answer the Questions: Answer any 3.   Marks: 2 X 3 = 6

    i.   How to create/delete normal user and set password for it in Linux?
    ii.   Write down the features and area of application of archiving.
    iii.   Describe Linux file permissions either in numeric form with an example for the given permission setup of file Archi.
    iv.   How to install locate command? Write command to find a file named 'archi'.

3. Answer the Questions: Answer any Two.   Marks: 2 X 5 = 10

    i.   Explain the redirection operator with examples.
    ii.   How to get a List of All Users in Linux? Describe the information contained in each field.
    iii.   Enlist some Linux networking and troubleshooting commands?

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