Andhra Pradesh State Council of Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Geo Engineering and Geo Informatics 18th July 2022 Shift 1
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Geo Engineering and Geo Informatics

Section Id :	9003008
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	120
Section Marks :	120
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 1 Question Id : 900300841 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the closest layer to the earth's surface in which all weather occurs?

Options :

1. ✖ Mesosphere

2. ✔ Troposphere

3. ✖ Ionosphere

4. ✖ Stratosphere

Question Number : 2 Question Id : 900300842 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following scholar coined the term of geography?

Options :

1. ✔ Eratosthenes

2. ✖ Herodotus

3. ✖ Galileo

4. ✖ Aristotle

Question Number : 3 Question Id : 900300843 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A tectonic plate is a slab of

Options :

1. ✖ liquid rock

2. ✖ molten rock

3. ✖ gases

4. ✔ solid rock

Question Number : 4 Question Id : 900300844 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How much percentage of earth's total volume of water (approximately) is found in ocean?

Options :

1. ✖ 91

2. ✔ 97

3. ✖ 99

4. ✖ 95

Question Number : 5 Question Id : 900300845 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ ocean occupies an elongated, S-shaped basin extending longitudinally between Europe and Africa to the east, and the Americas to the west.

Options :

1. ✖ Pacific

2. ✔ Atlantic

3. ✖ Arctic

4. ✖ Indian

Question Number : 6 Question Id : 900300846 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The descent of oceanic lithosphere into the mantle is the process of

Options :

1. ✖ accretion

2. ✔ subduction

3. ✖ divergence zone

4. ✖ contraction fault

Question Number : 7 Question Id : 900300847 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The earth's lithosphere is divided in to_____number of major plates

Options :

1. ✔ 7

2. ✖ 8

3. ✖ 4

4. ✖ 10

Question Number : 8 Question Id : 900300848 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Who is the father of modern oceanography?

Options :

1. ✖ Aristotle

2. ✖ Dave Dwyer

3. ✖ Psalm Eight

4. ✔ Matthew Fontaine Maury

Question Number : 9 Question Id : 900300849 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The difference in the duration of day and night increases as one moves from

Options :

1. ✔ Equator to poles

2. ✖ East to west

3. ✖ West to east

4. ✖ Poles to equator

Question Number : 10 Question Id : 900300850 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which among the following continents having no desert

Options :

1. ✖ North America

2. ✖ south America

3. ✔ Europe

4. ✖ Antarctica

Question Number : 11 Question Id : 900300851 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Tides in the sea is a combination of

Options :

1. ✖ hydraulic energy & potential energy only

2. ✖ kinetic energy & hydraulic energy only

3. ✖ gravitational potential energy only

4. ✔ hydraulic energy, kinetic energy and gravitational potential energy

Question Number : 12 Question Id : 900300852 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which among the following regions of earth having greater volume?

Options :

1. ✔ The mantle

2. ✖ The inner core

3. ✖ The outer core

4. ✖ The crust

Question Number : 13 Question Id : 900300853 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ocean depth can be measured with the help of the following instrument?

Options :

1. ✖ Aneroid barometer

2. ✔ Fathometer

3. ✖ Fluxmeter

4. ✖ Gastroscopy

Question Number : 14 Question Id : 900300854 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The latitude of a plane expresses its angular position relative to the plane of

Options :

1. ✖ South pole

2. ✖ North pole

3. ✔ Equator

4. ✖ Any axis of the earth

Question Number : 15 Question Id : 900300855 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Why are the ports of Baltic sea opened for trade in winter?

Options :

1. ✖ It is tropical belt

2. ✔ North Atlantic warm currents flow in this region

3. ✖ Local factors keep it warm

4. ✖ Western disturbances increase the temperature

Question Number : 16 Question Id : 900300856 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following volcanic rocks contain the highest percentage of silica?

Options :

1. ✖ Basalts

2. ✖ Andesite's

3. ✖ Trachyte's

4. ✔ Rhyolites

Question Number : 17 Question Id : 900300857 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In blocky lavas, the cavities are

Options :

1. ✖ small and regular in shape

2. ✔ large and irregular in shape

3. ✖ small and irregular in shape

4. ✖ large and regular in shape

Question Number : 18 Question Id : 900300858 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Rock forming minerals which require a high concentration of volatiles for their formation are described as

Options :

1. ✖ Pyro-genetic minerals

2. ✖ Hydro-thermal minerals

3. ✔ Hydato-genetic minerals

4. ✖ Released minerals

Question Number : 19 Question Id : 900300859 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When magmas of different composition intrude through the same channel it gives rise to

Options :

1. ✖ Multiple intrusion

2. ✔ Composite intrusion

3. ✖ Forced intrusion

4. ✖ Assimilation

Question Number : 20 Question Id : 900300860 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Volcanic necks are

Options :

1. ✖ sedimentary masses which lie towards the top of volcanic vents

2. ✖ igneous masses which lie towards the top of volcanic vents

3. ✔ igneous masses which seal up the vents of ancient volcanoes

4. ✖ thin masses of igneous rocks having numerous fissures

Question Number : 21 Question Id : 900300861 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A rock which consists of quartz, albite and aegirine in approximately equal amounts is described as

Options :

1. ✖ Tonalite

2. ✖ Aplite

3. ✔ Rockallite

4. ✖ Monzonite

Question Number : 22 Question Id : 900300862 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hardness of a mineral is defined as

Options :

1. ✖ the strength of mineral to withstand compression

2. ✖ the ability of a mineral to scratch other substances

3. ✔ the resistance of a mineral to abrasion on its surface

4. ✖ All of the above

Question Number : 23 Question Id : 900300863 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following group of rocks are most abundant on the moon?

Options :

1. ✖ Granites and granodiorites

2. ✖ Basalts and andesitic

3. ✖ Periodotites and picrites

4. ✔ Anorthosites and gabbros

Question Number : 24 Question Id : 900300864 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most common mode of origin for cross-bedding is

Options :

1. ✔ migration of small and mega-ripples

2. ✖ deposition on the point bars of small meanders

3. ✖ deposition on the inclined surfaces of beaches

4. ✖ lee-side deposition of sand dunes

Question Number : 25 Question Id : 900300865 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Horizontal or lateral gradation of material occurs if the deposition takes place in

Options :

1. ✖ stagnant water

2. ✔ running water

3. ✖ underground water

4. ✖ shore zone

Question Number : 26 Question Id : 900300866 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As compared with sandstones, shales have

Options :

1. ✖ higher porosity and permeability

2. ✖ lower porosity and permeability

3. ✔ higher porosity and lower permeability

4. ✖ lower porosity and higher permeability

Question Number : 27 Question Id : 900300867 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a stress mineral?

Options :

1. ✖ Andalusite

2. ✖ Sillimanite

3. ✔ Kyanite

4. ✖ Cordierite

Question Number : 28 Question Id : 900300868 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A coarse sand stone with angular grains may be described as

Options :

1. ✖ Gannister

2. ✖ Arkose

3. ✖ Quartzite

4. ✔ Grit

Question Number : 29 Question Id : 900300869 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 'Migmatite' is a mixed rock in which

Options :

1. ✔ an older metamorphic rock is mixed with younger granitic material

2. ✖ an older granitic rock is mixed with newly metamorphosed sediments

3. ✖ a primary gneiss mixes with metamorphosed gneissic sediments

4. ✖ fragments of igneous, sedimentary and metamorphic rocks are complexly mixed together

Question Number : 30 Question Id : 900300870 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following feature is the most important for analysis of sedimentary environments?

Options :

1. ✔ Primary structures

2. ✖ Sedimentary textures

3. ✖ Bioturbate structures

4. ✖ Colour of the sediments

Question Number : 31 Question Id : 900300871 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Minerals which dissolve in water are formed during

Options :

1. ✖ the differentiation of a magma

2. ✖ the later stages of magmatic crystallization

3. ✔ the early stages of magmatic crystallization

4. ✖ regeneration of a magma

Question Number : 32 Question Id : 900300872 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following minerals has largest stability filed?

Options :

1. ✖ Cordeirite

2. ✖ Kyanite

3. ✔ Sillimanite

4. ✖ Andalusite

Question Number : 33 Question Id : 900300873 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the most feebly magnetic among the following?

Options :

1. ✖ Quartz

2. ✖ Rutile

3. ✖ Magnesite

4. ✔ Galena

Question Number : 34 Question Id : 900300874 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Gneissic rocks that are metamorphosed sediments are described as

Options :

1. ✔ paragneisses

2. ✖ orthogneisses

3. ✖ phyllonites

4. ✖ augen gneisses

Question Number : 35 Question Id : 900300875 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Luster is defined as the appearance of a mineral in

Options :

1. ✖ incident light

2. ✖ white light

3. ✖ monochromatic light

4. ✔ reflected light

Question Number : 36 Question Id : 900300876 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A scale of 1 cm = 3 km is represented as a representative fraction as

Options :

1. ✖ 1: 3,000

2. ✖ 1: 30,000

3. ✔ 1: 3,00,000

4. ✖ 1: 30,00,000

Question Number : 37 Question Id : 900300877 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Closed contours with higher value inside represents a

Options :

1. ✖ Water body

2. ✔ Hill

3. ✖ Valley

4. ✖ Road

Question Number : 38 Question Id : 900300878 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In topographic map, the representation of the difference in elevation is called as---

Options :

1. ✖ benchmark

2. ✖ contour

3. ✖ hachures

4. ✔ relief

Question Number : 39 Question Id : 900300879 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 15 cm Theodolite means

Options :

1. ✖ length of telescope is 15 cm

2. ✖ height of standards is 15 cm

3. ✔ diameter of lower plate is 15 cm

4. ✖ radius of upper plate is 15 cm

Question Number : 40 Question Id : 900300880 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The inner axis of a theodolite is

Options :

1. ✖ The plate bubble axis on the horizontal circle

2. ✖ The axis passing through the Centre of the vertical circle

3. ✖ The trunnion axis

4. ✔ The Centre of the spindle carrying the Vernier circle

Question Number : 41 Question Id : 900300881 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In electronic theodolites, the horizontal and vertical circles are made of

Options :

1. ✔ glass having specially coded graduations read by photo diodes

2. ✖ special metal read electronically

3. ✖ steel plates with specially coded graduations

4. ✖ plastic with coded graduations

Question Number : 42 Question Id : 900300882 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Terrestrial photogrammetry is taking photographs of

Options :

1. ✖ the terrain of the earth from an aircraft

2. ✔ the terrain of the earth from cameras on ground

3. ✖ celestial bodies from the earth

4. ✖ celestial bodies from an aircraft

Question Number : 43 Question Id : 900300883 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The scale of photograph taken from an aircraft essentially depends upon

Options :

1. ✖ the aperture of the camera lens

2. ✖ the speed of the film used

3. ✔ the distance of the object from the camera

4. ✖ the focal length of the lens in the camera used

Question Number : 44 Question Id : 900300884 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vertical photograph is an aerial photograph made with the camera axis coinciding with the

Options :

1. ✖ direction of lens

2. ✖ direction of aperture

3. ✔ direction of gravity

4. ✖ direction of line of sight

Question Number : 45 Question Id : 900300885 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Contour interval on a map sheet denotes

Options :

1. ✖ vertical distance of contour lines above the datum plane

2. ✔ vertical distance between two successive contour lines

3. ✖ slope distance between two successive contour lines

4. ✖ horizontal distance between two successive contour lines

Question Number : 46 Question Id : 900300886 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the method of reiteration of measuring horizontal angles

Options :

1. ✖ the same angle is measured three times

2. ✔ the same angle is measured by face left and face right observation

3. ✖ the angle is measured and the instrument turned to close the horizon

4. ✖ the angle is measured three times each using face left and face right observations

Question Number : 47 Question Id : 900300887 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The smallest scale adopted for topographical survey is

Options :

1. ✖ 1: 25,000

2. ✖ 1: 50,000

3. ✖ 1: 2,50,000

4. ✔ 1: 5,00,000

Question Number : 48 Question Id : 900300888 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The point in which the bisector of angle of tilt meets the photographs is

Options :

1. ✖ Plumb point

2. ✔ Isocentre point

3. ✖ Principal point

4. ✖ Nadir point

Question Number : 49 Question Id : 900300889 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The point in the atmosphere occupied by center of the camera lenses at instance of photography is

Options :

1. ✔ Flying height

2. ✖ Exposure station

3. ✖ Photo station

4. ✖ Flying line

Question Number : 50 Question Id : 900300890 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A vertical photograph was taken from an aircraft flying at an altitude of 2000 m above mean sea level. The focal length of the camera is 175 mm. The scale of the photograph for a hill of elevation of 250 m is

Options :

1. ✔ 1/10000

2. ✖ 1/15000

3. ✖ 1/20000

4. ✖ 1/25000

Question Number : 51 Question Id : 900300891 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Theodolite is an instrument used for

Options :

1. ✖ tightening the capstan–headed nuts of level tube

2. ✖ measurement of horizontal angles only

3. ✖ measurement of vertical angles only

4. ✔ measurement of both horizontal and vertical angles

Question Number : 52 Question Id : 900300892 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Overlap in aerial photograph refers to

Options :

1. ✖ the overlap of ground features due to inclination of camera

2. ✖ the overlap of ground features due to difference in elevation of objects

3. ✔ the same ground features taken from two camera positions

4. ✖ the blurring due to lack of focus in photograph

Question Number : 53 Question Id : 900300893 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is used as reference for placing focal plane?

Options :

1. ✖ focal length

2. ✔ collimation marks

3. ✖ camera cone

4. ✖ azimuth

Question Number : 54 Question Id : 900300894 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Parallax bar is used to measure

Options :

1. ✖ parallax

2. ✔ parallax difference

3. ✖ difference in elevation

4. ✖ relief displacement

Question Number : 55 Question Id : 900300895 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Distortions in aerial photographs is caused by

Options :

1. ✖ Faulty camera lens

2. ✔ Tilt and ground relief

3. ✖ Lack of focus during photography

4. ✖ Large distance between camera and the object

Question Number : 56 Question Id : 900300896 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is belongs to stereoscopic vision?

Options :

1. ✔ The three – dimensional view from stereoscopic pairs

2. ✖ The view seen by the camera lens

3. ✖ The view obtained by special lens

4. ✖ Two – dimensional view from stereoscopic pairs

Question Number : 57 Question Id : 900300897 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Remote sensing uses which of the following waves in its procedure?

Options :

1. ✖ Electric field

2. ✖ Sonar waves

3. ✖ Gamma rays

4. ✔ Electromagnetic waves

Question Number : 58 Question Id : 900300898 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In visible region, the blue light is having a wave length range of

Options :

1. ✔ 0.42-0.52 micrometer

2. ✖ 0.24-0.52 micrometre

3. ✖ 0.42-1.92 micrometre

4. ✖ 0.22-0.32 micrometre

Question Number : 59 Question Id : 900300899 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Remote sensing and GIS can be used to

Options :

1. ✖ measure biodiversity

2. ✖ characterize biodiversity

3. ✖ count species

4. ✔ all of the above

Question Number : 60 Question Id : 900300900 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a principle of remote sensing?

Options :

1. ✔ Interaction of energy with satellite

2. ✖ Electromagnetic energy

3. ✖ Electromagnetic spectrum

4. ✖ Interaction of energy with atmosphere

Question Number : 61 Question Id : 900300901 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The variation of refractive index with wavelength is called

Options :

1. ✖ absorption

2. ✔ dispersion

3. ✖ diffraction

4. ✖ reflection

Question Number : 62 Question Id : 900300902 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The phenomenon of apparent change in frequency, with the relative motion of the source and the observer, is known as the

Options :

1. ✖ Shift

2. ✔ Doppler effect

3. ✖ Scattering

4. ✖ Emissivity

Question Number : 63 Question Id : 900300903 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an Electromagnetic field, which field is placed horizontal manner.

Options :

1. ✖ Gamma rays

2. ✖ Sonar field

3. ✖ Electric field

4. ✔ Magnetic field

Question Number : 64 Question Id : 900300904 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rate at which radiant energy is emitted, transferred in the form of electromagnetic radiation from a surface to another surface is called as

Options :

1. ✔ Radiant flux

2. ✖ Irradiance

3. ✖ Radiant intensity

4. ✖ Radiant energy

Question Number : 65 Question Id : 900300905 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The point where a perpendicular dropped from the front nodal point strikes the photograph. This point is considered to coincide with the intersection of x – axis and the y- axis is called

Options :

1. ✔ principle point

2. ✖ center point

3. ✖ coincidental point

4. ✖ reference point

Question Number : 66 Question Id : 900300906 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The unit of irradiance is

Options :

1. ✖ joule

2. ✖ watt

3. ✔ $watt/m^2$

4. ✖ watt-m^2

Question Number : 67 Question Id : 900300907 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solid angle which has its vertex at the centre of the sphere, and cuts off a spherical surface area on the sphere equal to the square of the radius of sphere is called as

Options :

1. ✔ steradian

2. ✖ radiant

3. ✖ irradiance

4. ✖ radiance

Question Number : 68 Question Id : 900300908 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sensors, which produce their own electromagnetic radiation are

Options :

1. ✖ passive sensors

2. ✔ active sensors

3. ✖ remote sensors

4. ✖ light sensor

Question Number : 69 Question Id : 900300909 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

USGS stands for

Options :

1. ✖ United States Geological Standards

2. ✖ United States Geometrical Standards

3. ✔ United States Geological survey

4. ✖ United States Geometrical Survey

Question Number : 70 Question Id : 900300910 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The aspects to spectral band selection is/are

Options :

1. ✖ the central wavelength only

2. ✖ the bandwidth only

3. ✖ the total number bands only

4. ✔ all of the above

Question Number : 71 Question Id : 900300911 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the wrong match from the following.

Options :

1. ✖ LISS – Linear Imaging Self-scanning Sensor

2. ✖ ISRO – Indian Space Research Organisation

3. ✔ MTF – Modulation Transfer Formation

4. ✖ LANDSAT- LAND observation Satellite

Question Number : 72 Question Id : 900300912 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The altitudinal distance of a geostationary satellite from the earth is about

Options :

1. ✔ 36,000 km

2. ✖ 26,000 km

3. ✖ 16,000 km

4. ✖ 10,000 km

Question Number : 73 Question Id : 900300913 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the rational method, the runoff coefficient is

Options :

1. ✔ less than one

2. ✖ one

3. ✖ more than one

4. ✖ infinite

Question Number : 74 Question Id : 900300914 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The repetivity of satellite remote sensing is depends on

Options :

1. ✖ orbit characteristics only

2. ✖ swath only

3. ✔ orbit characteristics & swath only

4. ✖ type of satellite

Question Number : 75 Question Id : 900300915 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which colour of Electromagnetic spectrum is used for bathymetry studies?

Options :

1. ✔ Green

2. ✖ Red

3. ✖ White

4. ✖ Black

Question Number : 76 Question Id : 900300916 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If L_{max} and L_{min} are the maximum and minimum radiance between the adjacent areas, the contrast modulation C_M is given by

Options :

1. ✔ $C_M = \frac{L_{max} - L_{min}}{L_{max} + L_{min}}$

2. ✖ $C_M = \frac{L_{max}}{L_{min}}$

3. ✖ $C_M = \frac{L_{max} + L_{min}}{L_{max} - L_{min}}$

4. ✖ $C_M = \frac{L_{min}}{L_{max}}$

Question Number : 77 Question Id : 900300917 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

1 cm wavelength corresponding to the electromagnetic spectrum of

Options :

1. ✖ Infrared rays

2. ✖ Ultraviolet rays

3. ✔ Microwaves

4. ✖ X rays

Question Number : 78 Question Id : 900300918 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Among the following _____ can be expressed as an example of hardware component in GIS

Options :

1. ✖ Auto CAD

2. ✔ Keyboard

3. ✖ Arc GIS

4. ✖ Digitalization

Question Number : 79 Question Id : 900300919 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Who is the father of Geographic Information System (GIS) ?

Options :

1. ✖ Richard

2. ✖ Roger James

3. ✔ Roger Tomlinson

4. ✖ James

Question Number : 80 Question Id : 900300920 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Generic term denoting the use of computers to create and depict digital representations of the Earth's surface is known as _____.

Options :

1. ✔ GIS

2. ✖ GPS

3. ✖ GNSS

4. ✖ DBMS

Question Number : 81 Question Id : 900300921 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

The runoff coefficient is more when the land is

Options :

1. ✔ very slope

2. ✖ flatter

3. ✖ mildly slopy

4. ✖ dry

Question Number : 82 Question Id : 900300922 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

GIS deals with which kind of data

Options :

1. ✖ Binary data

2. ✖ Numeric data

3. ✖ Complex data

4. ✔ Spatial data

Question Number : 83 Question Id : 900300923 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A projected map at a time can never show which of the following

Options :

1. ✔ True shape, true area, true directions

2. ✖ True direction and true area only

3. ✖ True shape and true direction only

4. ✖ True area and True shape only

Question Number : 84 Question Id : 900300924 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A receiver at GPS calculates the self-time and position based on the data received from different

Options :

1. ✔ Satellites

2. ✖ Radio waves

3. ✖ Atomic clocks

4. ✖ Microwaves

Question Number : 85 Question Id : 900300925 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Orbital radius of GPS satellites is approximately

Options :

1. ✖ 10,000 km

2. ✔ 26,000 km

3. ✖ 9,000 km

4. ✖ 6,000 km

Question Number : 86 Question Id : 900300926 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A set of regularly spaced and contiguous cells with associated field values. The associated values represent cell values, not point values. This format is known as_____

Options :

1. ✖ Crystal

2. ✔ Raster

3. ✖ Vector

4. ✖ Segment

Question Number : 87 Question Id : 900300927 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vector data model is based on which of the following?

Options :

1. ✔ Cartesian coordinate system

2. ✖ Pixel or grid cells

3. ✖ Collection of points joined by straight lines

4. ✖ Variable data

Question Number : 88 Question Id : 900300928 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following might be considered as the fourth dimension in GIS?

Options :

1. ✖ Location

2. ✔ Time

3. ✖ Space

4. ✖ Scale

Question Number : 89 Question Id : 900300929 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hardware which is used for converting document from analogue to digital (raster) format is known as _____

Options :

1. ✖ Digitizing

2. ✖ Data Editing

3. ✔ Scanner

4. ✖ Sensing data

Question Number : 90 Question Id : 900300930 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many satellites are required to measure 2-D position using Global Positioning System.

Options :

1. ✖ One

2. ✖ Two

3. ✔ Three

4. ✖ Four

Question Number : 91 Question Id : 900300931 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Runoff is the drainage of precipitation from a

Options :

1. ✖ river

2. ✖ drainage channel

3. ✔ catchment

4. ✖ reservoir

Question Number : 92 Question Id : 900300932 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not in the form of vector data?

Options :

1. ✖ Line

2. ✖ Point

3. ✔ Grid cells

4. ✖ Polygon

Question Number : 93 Question Id : 900300933 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is 'Metadata'

Options :

1. ✔ It is data about data

2. ✖ It is meteorological data

3. ✖ It is contour data

4. ✖ It is oceanic data

Question Number : 94 Question Id : 900300934 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not in the list of 4 M's termed as key activities which can be enhanced by using information system through GIS?

Options :

1. ✖ Monitoring

2. ✔ Managing

3. ✖ Mapping

4. ✖ Modelling

Question Number : 95 Question Id : 900300935 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a component of Geographic Information System?

Options :

1. ✖ Hardware

2. ✖ Software

3. ✖ People

4. ✔ Projection

Question Number : 96 Question Id : 900300936 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Shape of the pixel in raster format can be in the form of

Options :

1. ✖ Irregular

2. ✖ Circular

3. ✔ Square

4. ✖ Triangular

Question Number : 97 Question Id : 900300937 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In GIS, to describe the geometric characteristic of objects which do not change under transformations and are independent of any co-ordinate system is called as

Options :

1. ✔ topology

2. ✖ topography

3. ✖ geography

4. ✖ cartography

Question Number : 98 Question Id : 900300938 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a non–recording rain gauge?

Options :

1. ✔ Symon's rain gauge

2. ✖ Float type rain gauge

3. ✖ Tipping bucket rain gauge

4. ✖ Weighing type rain gauge

Question Number : 99 Question Id : 900300939 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The double mass curve technique is adopted to _____

Options :

1. ✖ estimate the missing data

2. ✖ obtain intensity of rainfall at various durations

3. ✔ to check consistency of rainfall data

4. ✖ to obtain amount of storage needed to maintain a demand pattern

Question Number : 100 Question Id : 900300940 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hyetograph is a graphical representation of

Options :

1. ✖ cumulative rainfall over time

2. ✔ rainfall intensity over time

3. ✖ rainfall depth over duration

4. ✖ discharge over time

Question Number : 101 Question Id : 900300941 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Lysimeter is an instrument to measure

Options :

1. ✖ reference evapotranspiration

2. ✖ evaporation

3. ✔ actual evapotranspiration

4. ✖ transpiration

Question Number : 102 Question Id : 900300942 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to Dalton's law evaporation is directly proportional to

Options :

1. ✔ the vapor pressure gradient

2. ✖ the difference between saturation vapour pressure at 100^0 C and the actual vapour pressure

3. ✖ the difference between the actual vapour pressure and the saturation vapour pressure at 0^0 C

4. ✖ the difference between the saturation vapour pressure at 0^0 C

Question Number : 103 Question Id : 900300943 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Data that describe the characteristics of spatial features is called as _____

Options :

1. ✖ Coverage

2. ✔ Attribute data

3. ✖ Geospatial Data

4. ✖ Data Exploration

Question Number : 104 Question Id : 900300944 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following type of the soil, which contains finest particles is

Options :

1. ✖ Silt

2. ✖ Gravel

3. ✔ Clay

4. ✖ Sand

Question Number : 105 Question Id : 900300945 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

It is given that the runoff volume in terms of depth is 50 mm and the catchment area is 2000 km^2.

Determine the volume in terms of m^3.

Options :

1. ✔ 1000×10^5

2. ✖ 1000

3. ✖ 10,000

4. ✖ 1000×10^3

Question Number : 106 Question Id : 900300946 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Evapotranspiration from a water surface is the process by which liquid on a free surface is transformed into

Options :

1. ✖ Solid state

2. ✖ Clouds

3. ✔ Gaseous state

4. ✖ rainfall

Question Number : 107 Question Id : 900300947 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Isohyets are drawn by

Options :

1. ✖ drawing perpendiculars on lines joining rain gauge stations

2. ✖ joining rain gauge station

3. ✖ drawing lines of equal elevations

4. ✔ drawing lines of equal precipitation depth for a given duration

Question Number : 108 Question Id : 900300948 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Centering error of a theodolite produces the error

Options :

1. ✖ in all angles equally

2. ✖ which does not vary with the direction or pointing

3. ✔ which varies with the direction of pointing and inversely with the length of sight

4. ✖ which varies with the direction of pointing and the length of sight

Question Number : 109 Question Id : 900300949 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Removal of parallax, may be achieved by focusing

Options :

1. ✖ the objective only

2. ✖ the eye-piece only

3. ✔ the objective and eye-piece

4. ✖ Neither the objective nor the eye-piece

Question Number : 110 Question Id : 900300950 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Permeability of soil varies

Options :

1. ✖ inversely as square of grain size

2. ✔ as square of grain size

3. ✖ as grain size

4. ✖ inversely as grain size

Question Number : 111 Question Id : 900300951 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x,y)=\begin{cases}\frac{xy(x^2-y^2)}{x^2+y^2} & (x,y)\neq(0,0)\\ 0 & (x,y)=(0,0)\end{cases}$, then $\frac{\partial}{\partial x}\left(\frac{\partial f}{\partial y}\right)(0,0)$ is

Options :

1. ✔ 1

2. ✖ 0

3. ✖ -1

4. ✖ Do not exists

Question Number : 112 Question Id : 900300952 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sum of series $\sum_{n=0}^{\infty}\left(\frac{5}{2^n}-\frac{1}{3^n}\right)$ is

Options :

1. ✖ $\frac{15}{3}$

2. ✖ $\frac{15}{2}$

3. ✖ $\frac{17}{3}$

4. ✔ $\frac{17}{2}$

Question Number : 113 Question Id : 900300953 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The outward flux of $F = 4xz\,i - y^2\,j + yz\,k$ across the cube bounded by the planes $x = 0,\ x = 1, y = 0, y = 1, z = 0$ and $z = 1$ is

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $\frac{-1}{2}$

3. ✔ $\frac{3}{2}$

4. ✖ $\frac{-3}{2}$

Question Number : 114 Question Id : 900300954 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let X be a continuous random variable with probability density function $f(x)$ is given by $f(x) = \begin{cases} a + bx & if\ x \in [0,1] \\ 0 & otherwise \end{cases}$, where a and b are constants. If the expectation $E(X) = \frac{5}{12}$, then $E(X^2)$ is

Options :

1. ✔ $\frac{1}{4}$

2. ✖ $\frac{1}{2}$

3. ✖ $\frac{5}{2}$

4. ✖ $\frac{1}{8}$

Question Number : 115 Question Id : 900300955 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If X is the number of trails needed to obtain the first success, then X follows

Options :

1. ✖ Binomial distribution

2. ✖ Exponential distribution

3. ✖ Normal distribution

4. ✔ Geometric distribution

Question Number : 116 Question Id : 900300956 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let $A = \begin{bmatrix} 3 & -1 & 0 \\ -1 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$. The upper triangular matrix U in LU decomposition of $A = \begin{bmatrix} 1 & 0 & 0 \\ l_{21} & 1 & 0 \\ l_{31} & l_{32} & 1 \end{bmatrix} \begin{bmatrix} u_{11} & u_{12} & u_{13} \\ 0 & u_{22} & u_{23} \\ 0 & 0 & u_{33} \end{bmatrix}$ is

Options :

1. ✖ $\begin{bmatrix} 3 & -1 & 0 \\ 0 & -1 & \frac{8}{3} \\ 0 & 0 & \frac{21}{8} \end{bmatrix}$

2. ✔ $\begin{bmatrix} 3 & -1 & 0 \\ 0 & \frac{8}{3} & -1 \\ 0 & 0 & \frac{21}{8} \end{bmatrix}$

3. ✖ $\begin{bmatrix} 3 & -1 & 0 \\ 0 & \frac{8}{3} & -1 \\ 0 & 0 & -\frac{21}{8} \end{bmatrix}$

4. ✖ $\begin{bmatrix} 3 & -1 & 0 \\ 0 & -1 & \frac{8}{3} \\ 0 & 0 & -\frac{21}{8} \end{bmatrix}$

Question Number : 117 Question Id : 900300957 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the probability of producing a defective screw is 0.01, what is the approximate value of the probability that a lot of 100 screws will contain more than two defective screws?

Options :

1. ✔ 0.0805

2. ✖ 0.099

3. ✖ 0.0764

4. ✖ 0.0354

Question Number : 118 Question Id : 900300958 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let X be normal with mean 50 and variance 9. What is the value of c such that

$P(50 - c < X < 50 + c) = 0.5$?

(Use $\Phi(0.67) = 0.7486$ and $\Phi(0.68) = 0.7517$ from the standard normal table)

Options :

1. ✖ 1.58

2. ✔ 2.02

3. ✖ 1.92

4. ✖ 2.25

Question Number : 119 Question Id : 900300959 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

All the eigenvalues of matrix $\begin{pmatrix} 1 & 2 & 0 \\ 2 & 1 & 0 \\ 0 & 0 & -1 \end{pmatrix}$ lie in the disc:

Options :

1. ✖ $\{x : |x + 1| \leq 1\}$

2. ✖ $\{x : |x - 1| \leq 1\}$

3. ✖ $\{x : |x+1| \leq 0\}$

4. ✔ $\{x : |x-1| \leq 2\}$

Question Number : 120 Question Id : 900300960 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let $A = \begin{pmatrix} a & -1 & 4 \\ 0 & b & 7 \\ 0 & 0 & 3 \end{pmatrix}$ be a matrix with real entries. If sum and the product of all the eigenvalues of A are 10 and 30 respectively, then $a^2 + b^2$ equals:

Options :

1. ✔ 29

2. ✖ 40

3. ✖ 58

4. ✖ 653