

17/10/2023.

प्रति
श्री. प्राचार्य
अमृतवाहिणी इंजिनिअरिंग कॉलेज
अमृतनगर छत्रपती.
422 60 8.

अर्जवाट: बेनके पृथ्वीराज नितीन.
(सिद्धीन विभाग, -2019 पेंशन).

विषय: ① फोटोकॉपी मधील दुरुस्ती, बाबत
② रिटायरेशन पेमेंट स्टेटस पेंडिंग, बाबत...

महोदय,

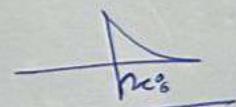
वरील विषयाम अनुसरून करणे विनंती अर्ज करतो
की,

संबंधित जोडलेल्या विषयाच्या फोटोकॉपी मध्ये,
प्रश्न क्रं 5 चे माफि मुख्य प्रभाव उत्तरवलेले नाहीत,
तरी तातुन बेरीज मुख्य प्रभाव बरोबर दिसत आहे.

त्यासंबंधित रिटायरेशन साठी वेबसाईटवर
ऑनलाइन केलेले असताना त्यासाठी लागणारे
पैसे साक्षा अकाउंट मधुन कट झाले आहेत.

तरी स्टुडंट प्रोफाइलवर त्याचे स्टेटस पेंडिंग
दाखवत आहे. तसेच, डिजिटल स्टुडंट प्रोफाइलवर,
संबंधित विषयाचे, 27 मार्च दाखवत आहे.

तरी फोटोकॉपी मध्ये प्रश्न क्रं. 5 चे माफि मुख्य प्रभाव
ह्यावे हि नम्र विनंती.



आपचा नम्र.

बेनके पृथ्वीराज नितीन.

contact NO: 750747200 / 77884
mail: pruthibenke2626@gmail.com

डोक्युमेंटः

- फोटोकॉपी.
- exam form print.
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- digital marks shown on student profile copy
- payment debited transaction copy.

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Result

Subjects Selected for Revaluation

Sr.No.	Subject Code	Subject Name	Marks Obtained	Marks OutOf
1	301014	REMOTE SENSING AND GIS	27	70

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SAVITRIBAI PHULE PUNE UNIVERSITY

Seat No T190100141
 Stk. No 2343403
 Sub. RS&GIS
 Centre 4010

301014-RS&GIS



Sem:6 7031931

TEC2019001 CIVIL Eng
 Examination 26/6/2023 / Mon
 Day & Date 26/6/2023 / Mon
 Subject Remote Sensing
 and GIS
 Paper No. 6003-339 Sec
 Medium of Answer English

Seat No. : In figure & In words

1 9 0 1 0 0 1 4 1
 T one nine zero
 one zero zero
 one four one

Signature of Candidate

Signature of r. Supervisor

Center No.

Supplements attached

Main Answer Book	No. of Supplements	Total
1	+	0 = 1

Specific remarks of Centre conductor regarding malpractice (in Red ink)

Total	Marks in Figure	Marks in Words	Sign
Examiner	35	Thirti Five	(Red)
Moderator	35	Thirti Five	(Red)

Instruction to Candidate

1. Candidate has to confirm seat number, subject and centre number printed on Bar code and Write it on attendance sheet.

विद्यार्थ्याने प्रथम बार कोडवरील आसन क्रमांक, विषय व केंद्र क्रमांक तपासून योग्य असल्याची खात्री करावी आणि उपस्थिती पत्रकावर नोंदवावी.

2. Paste Bar Code in prescribed space.
उत्तरपत्रिकेवरील विहित जागेतच बार कोड लावावा.

3. Do not write anything on bar code sticker, otherwise it will be treated as unfair means.
बार कोड स्टिकवर काहीही लिहू नये, अन्यथा परीक्षा गैरप्रकार समजला जाईल.

Q. No.	Examiner		Moderator	
1	0	3	0	3
2				
3				
4	1	4	1	4
5				
6				
7	1	0	1	0
8				
9				
10				
11				
12				
Total in Figure	0	3	0	3
Total in Words	Thirti Five		Thirti Five	
Signature	(Red)		(Red)	

१. विद्यार्थ्याने उत्तरपत्रिकेच्या मुखपृष्ठावर तसेच पुरवणी उत्तरपत्रिकेवर आणि उपस्थिती पत्रकावर विहित जागेत आसन क्रमांक अंकात व अक्षरात बिनचूक लिहून स्वाक्षरी करावी.
२. उत्तरपत्रिकेवर फक्त निळ्या अथवा काळ्या शाईचा उपयोग करावा, अन्यथा उत्तरपत्रिकेचे मूल्यमापन केले जाणार नाही.
३. उत्तरपत्रिकेच्या पृष्ठक्रमांक ३ पासून लिहिण्यास प्रारंभ करावा.
४. संबंधित प्रश्नाचे अथवा उपप्रश्नाचे उत्तर जेथून सुरु होते तेथेच समासात प्रश्न क्रमांक, उपप्रश्न क्रमांक अचूक व स्पष्ट लिहावा, यासाठी वेगळ्या शाईचा उपयोग करू नये.
५. प्रत्येक पानाच्या दोन्ही बाजूस लिहावे, उत्तरपत्रिका किंवा पुरवणी उत्तरपत्रिकेचे कोणतेही पान फाडू नये, फाडल्यास परीक्षा गैरप्रकार समजून पुढील कार्यवाही करण्यात येईल.
६. पेपर संपण्यापूर्वी १० मिनिटे अगोवर इशारा घंटा होईल, त्यानंतर विद्यार्थ्याने उत्तरपत्रिका व पुरवणी उत्तरपत्रिकेवर होलोक्राफ्ट स्टिकर विहित जागेवरच लावावा.

Candidate shall fill all information about seat number, paper etc. in prescribed space and sign on the answer book and attendance sheet.

Candidate shall use blue or black ink only, Otherwise answer book will not be evaluated.

Candidate shall start writing answers from page no.3 of the answer book.

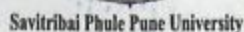
Candidate shall mention question number, sub question number correctly at the beginning of the same and shall not use ink other than blue or black.

Candidate shall write on both sides of pages. Shall not tear off any page, it will be treated as unfair means.

Warning bell will be given before 10 minutes of the concluding time. Candidate shall paste Hollocraft Sticker at appropriate space on the answer book and supplements.

Examiner and Moderator has to write marks on all given appropriate places only. Examiner should give assessment tick (✓) or (x) in the margin.

Q. No.	Examiner	Moderator	Verification	Revaluation
1	03	03		
2	—	—		✓
3	—	—		
4	14	14		
5	08	08		
6	—	—		
7	10	10		
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12				
Total	35	35		



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Q. No. / Q.No.

Q16]

GNSS applications rely upon satellite signals to complete their task efficiently and accurately. These applications range across many different industries - from agriculture to automotive to defence - but generally will fall into five categories:

- Location - determining your position in the world.
- Navigation - identifying the best route from one location to another.
- Tracking - monitoring an object's movement in the world.
- Mapping - creating maps of a specific area.
- Timing - computing precise timing within billionths of a second.



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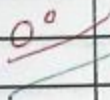


SPPU-7/24

7

Q. No. / Q.No.

Q.1 c] Global Navigation Satellite System.





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Q. No.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. A vertical line runs down the left side, creating a narrow margin. At the top left corner, there is a small rectangular box, likely for a header or label. The paper appears slightly aged or off-white.



Q.No.							TOTAL
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Q. 4] →
c] DEM =

- It is the digital representation of the land surface elevation with respect to any reference datum. DEMs are used to determine terrain attributes such as elevation at any point slope and aspect's.
- terrain features like drainage basins and channels network can also be identified from the DEMs. DEMs are widely used in hydrologic and geologic analyses hazard monitoring, natural resources exploration agricultural management etc.
- Hydrologic application of the dem include groundwater modeling, estimation of the volume of proposed reservoirs, determining landslide probability, flood prone area mapping etc.
- A DEM is defined as 'any digital representation of the continuous variation of relief over space (Burrough 1986), where relief refers to the height of earth's surface with respect to the datum considered.



Q.No.	4C						TOTAL
E	04						04
M	04						04



7. 7. /Q.No.

derived.

— It can also be considered as regularly spaced grids of the elevation information, used for the continuous spatial representation of any terrain.

— the Digital Terrain Model (DTM) and Digital Surface Model (DSM) are often used as synonyms of the DEM. Technically a DEM contains only the elevation information of the surface, free of vegetation, building and other non-ground objects with reference to a datum such as Mean Sea Level (MSL).

— Types of DEMs

— DEMs are generated by using the elevation information from several points spaced or regular or irregular intervals.

— three main type of structure used are the following.

- Regular Square grids
- Triangular irregular network (TIN)
- Contours

- Gridded DEM
- TIN DEM
- Contour-based DEM.



Q.No.						TOTAL
E						
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Q. No.

Q.4

b) → Image Registration.

- Image Registration is the translation and alignment process by which two images/maps of like geometrics and of the same set of objects are positioned co-incident with respect to one another so that corresponding elements of the ground are upper in the same place on the registered image.
- This is often called image to image registration. One more important concept with respect to geometry of satellite image is rectification. Rectification is the process by which the geometry of an satellite image area is made planimetric.
- This process almost always involves relating Ground Control Point (GCP), pixel coordinates with precise geometric correction since each pixel can be referenced not only by the row or column in a digital image, but it is also rigorously referenced in degree, feet or meter in a standard map projection wherever accurate data direction and distance



Q.No.	4b					TOTAL
E	05					05
M	05					05



Q. No.

measurements are acquired map
geometric rectification is required
→ this is often called as image
or map registration.

05



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प्र. क्र /Q.No.

80 47

a) $\rightarrow$ Digital Image processing.

- An Image is a two-dimensional representation of object's in a real scene.
- Remote Sensing images are representation of parts of the earth surface as seen from space. The image may be analog or digital.

- It is manipulation of the digital data with help of computer hardware and software to produce digital maps in which the specific information has been extracted and highlighted.

- objective improvement on pictorial information for human interpretation

- processing of image data for storage, transmission and representation for autonomous machine perception.

- Aerial photographs are examples of analog images while satellite images acquired using electronic sensors are examples of digital image.

- A digital image processing is a two-dimensional array of pixels. Each pixel has a intensity value (represented by digital number) and a location address (represented by its



		Q.No.						TOTAL
E		40						05
M		05						05



7. Q.No.

Row & column numbers)
 - A digital image processing comprises of a two dimensional array of individual picture elements called pixels arranged in columns and rows. Each pixel represents an area on the earth's surface. A pixel has an intensity value and a location address in the two dimensional images.

05



Q.No.							TOTAL
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Q. No. 5

b]

Cloud Computing =
 Nowadays, every successful organization has a presence over the internet for which they require a data center irrespective of their size. The traditional data center is on-premises, meaning that all its functionality is carried out in a physical site within enterprise office space. A data center might be a few computers under a desk, a climate-controlled room filled with blade servers, or a whole building. It is managed by an in-house IT team employed and paid for by the enterprise which owns the data center.

Types =

- (1) Infrastructure as a Service (IaaS in cloud computing)
- (2) Platform as a Service (PaaS in cloud computing)
- (3) Software as a Service (SaaS in cloud computing)



Q.No.		56						TOTAL
E		05						05
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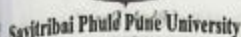
• There are three Cloud deployment models.

① public cloud.

② private cloud.

③ Hybrid cloud.

05



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95 C

Essential element of GIS

A Functional GIS also has a number of components that work together to make the system work. Computer hardware, sets of application software modules, required data, people who manage the system and develop plans and a well-design implementation method are the five major components of GIS.

A functional GTS incorporates the five key components listed below:

- 1 Hardware.
- 2 Software.
- 3 Data.
- 4 people.
- 5 methods.

22

18



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Q. 5)

97 →

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[illegible]

So $7 \rightarrow$

In GIS there are two types of spatial data types.

a] Vector Data.

b) Raster data.

a] Vector data.

- Vector data can be used to display real-world features in a GIS environment. Geometry is used to represent the shape of a vector feature. - the geometry is made up of one or more interconnected vertices.

A Vertex is a point in Space that is described by an x , y and optionally z axis.

— In the Vector data model, features on the earth are represented as point.

Line Routes

polygons / regions.

— TIN (triangulated irregular network)

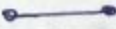
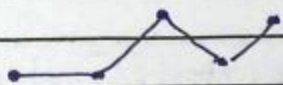
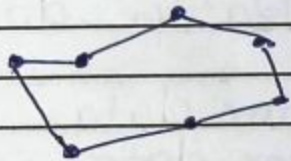
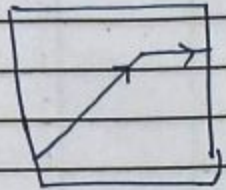
- All spatial data models are approaches to storing the spatial of geographic features in a database. Vector storage involves the use of vectors (direction lines) to represent geographic feature.



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Q. No.

	line  $(x_1, y_1)(x_2, y_2)$ String  $(x_1, y_1) \dots (x_n, y_n)$ Area  $(x_1, y_1) \dots (x_{n-1}, y_{n-1})(x_n, y_n)$  Vector data a) Geometry b) Vector data. - Raster data. - Raster data models involve the use of a grid cell data structure in which the geographic area is divided into cells identified by rows and columns, this data structure is commonly known as a grid. while the term grid implies a regularly spaced grid, there are other tiled data structure in grid-based GIS system. In particular, the four-tier data structure has found some degree of acceptance as an alternative raster data model. - Raster data is information that -
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Q.No.	79						TOTAL
E	04	07					04
M	07						07



Q. No.

is presented in the form of the
a grid of pixel. Each pixel in a
→ raster has a value, which can be
a colour or a unit of measurement
that is used to communicate
information about the element in
question.

04



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Q. No.

Q.7

b)

application of GIS in civil engineering.

GIS plays an important role and serves as a comprehensive platform throughout the infrastructure life cycle. The advancement and availability of technology have raised the bar for professionals working in infrastructure development. Civil engineering professionals are now seeking the assistance of these technologically advanced and improved information systems such as GIS for infrastructure development.

- Planning = the primary contribution of GIS in planning is to provide us with an organized set of data that can assist professionals in combating complex scenarios relating to site selection, environmental impact, ecosystem study, risk management in the use of natural resources, sustainability issues, managing traffic congestion, routing of roads and pipelines and so on.
- Data Collection = precise and accurate data is a critical component of



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any Successful project GIS is equipped with almost all of the Tools and Functions that allow users to gain access to the necessary data in a reasonable amount of time.

- Analysis = one of the most important and influential phases of the infrastructure life cycle is analysis. analysis informs us about the validity or correctness of a design, or it can be defined as a method that support our design.
- the following are some of the analyses that GIS can read directly by the system performs

- (1) Examine the distribution of water.
- (2) An examination of traffic management.
- (3) Soil examination.
- (4) Soil ~~Fea~~ Sibility Study.
- (5) Environmental impact assessment.
- (6) Catchment Volume or area analysis.
- (7) pattern analysis of rivers or area rapals.
- (8) Analysis of temperature and humidity.



Q.No.	76						TOTAL
E	06						06
M	05						05



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● Construction =

- (1) use of construction equipment on time.
- (2) working hour's.
- (3) Seasonal fluctuations.
- (4) Route optimization for dumpers and concrete trucks.

— there are various applications of RS which may be grouped into

- Resource Exploration.
- Environmental Study
- Land use.
- Site Investigation
- Archaeological Investigation and
- Natural Hazards Study

05
06