Seat No.

Total No. of Pages : 2

MAR-APR-2024 SUMMER EXAMINATION

B.Tech. CBCS

Sub. Name: Surveying-I

Sub. Code: 73198/77770

Day and Date: MAY ,04-05-2024 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: **1. Assume suitable data wherever necessary and mention it boldly**
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: **Attempt Any Three questions from question number 1 to question number 4.**
Attempt Any Three questions from question number 5 to question number 8.

Q1) a) Define Level line , horizontal line and vertical line with neat sketch (06) **[12]**

b) Explain Reciprocal Levelling in detail with neat sketch (06)

Q2) a) Explain Simpsons rule with neat sketch for area calculation (05) **[11]**
b) Explain trapezoidal rule with neat sketch for area calculation (06)

Q3) a) Describe orientation by magnetic needle method (05) **[11]**
b) What are advantages and disadvantages of plane table surveying (06)

Q4) Attempt any **three** questions from the following , **[12]**
a) Write note on characteristics of contours (04)
b) Write various usage of contour maps (04)
c) Explain factors affecting sensitivity of bubble tube (04)
d) Write short note on Area of zero circle.(04)
e) Explain Radiation method in plane table survey (04)

Q5) a) Explain procedure of measuring vertical angles with theodolite (06) **[12]**
b) What are temporary adjustments of Vernier Theodolite (06)

Q6) a) The following records are obtained in a traverse survey,where the length and bearing of the last line were not recorded, **[11]**

LINE	LENGTH IN [M]	BEARING
AB	75.50	30°24′
BC	180.50	110°36′
CD	60.25	210°30′
DA	?	?

Compute the length and bearing of line DA. (08)
b) Explain Bowditch rule (03)

Q7) a) What are various usage of ghat tracer (05) **[11]**
b) What are various usage of abney level and hand level (06)

Q8) Attempt any **three** questions from the following , **[12]**
a) Write note on Hydrographic surveying (04)
b) Explain Latitude and Departure (04)
c) Write note on Tunnel surveying (04)
d) Explain usage of Box sextant (04)
e) Explane usage of Theodolite (04)

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Total No. of Pages : 8

March-April 2024 Examination

B.Sc. (CBCS) Environmental Studies

पर्यावरण अभ्यास

Subject Code: 94282/ 84775/ 79089/ 79118

Day and Date : Sunday, 05-05-2024 **Total Marks : 70**

Time : 10:30 am to 01:30 pm

Q.1 Multiple Choice Question **[1 x 10 mark]**

1. A poisonous gas given out of a vehicle exhaust is.....

   a) Methane b) Ethane

   c) Carbon dioxide d) Carbon monoxide

2. The ozone layer is becoming thin due to the gas.....

   a) CO b) CFCS

   c) CO_2 d) NO_2

3. "El Nino' this Phenomenon is associated with .....

   a) Climate change b) Air pollution

   c) Water Pollution d) Radiation effect

4. "Smog' is a mixture of .....

   a) Dust and gas b) Smoke and dust

   c) Snow and fog d) Smoke and fog

5. 'Environmental studies discipline has ..... scope.

   a) Multiple and multilevel

   b) Unilateral

   c) Important

   d) Natural

6. The Environment (Protection) Act, 1986 was enacted for the..... of environment.

   a) Protection and improvement

   b) Law and enforcement

   c) Management and economy

   d) Health and regulation

7. The primary producers in a forest ecosystem are .....

   a) Bacteria and other micro-organism

   b) Carnivores

   c) Herbivores

   d) Chlorophyll containing trees and plants

8. Acid rain happens due to reaction ofin atmosphere

   a) Atmospheric water and carbon monoxide

   b) Sulphur oxides and atmospheric water

   c) Sulphuric acid and carbon dioxide

   d) Nitrogen oxide and oxygen

9. Noise is measured using sound meter and the unit is .....

a) Hertz b) Kilogram

c) Joule d) Decibel

10. The order of basic processes involved in succession is--

a) Nudation ->stabilization-> competition and co action ->Invasion->reaction

b) Nudation ->Invasion-> competition and co action reaction->stabilization

c) Invasion Nudation ->competition and co action ->Reaction->stabilization

d) Invasion stabilization competition and co action->Reaction>nudation

Q.2 Answer any three from following (3 x 5marks)

Q.1 Describe the structure of pond ecosystem,

Q.2 Define deforestation and list causes of deforestation.

Q.3 Define soil erosion and list the causes.

Q.4 Explain genetic, species and ecosystem diversity with examples.

Q.5 What are the causes of marine pollution?

Q.3 Write Short note on any three (3 x 5marks)

Q.1 Thermal pollution

Q.2 Desert ecosystem

Q.3 Ex-situ conservation

Q.4 Climate change

Q.5 Advantages and disadvantages of dams.

Q.4 Explain in detail Wildlife Protection Act.1972 **(10 marks)**

OR

Describe the various kinds of ecological pyramids with suitable diagram.

Q.5 Explain World food problem and note on effect of modern agriculture practice on environment. **(10 marks)**

OR

Explain in detail definition, Causes, effects and control measures of Noise pollution.

Q.6 Define Environment and explain its scope and importance as multi-disciplinary subject. **(10 marks)**

OR

What is disaster management? Explain with floods and earthquake.

◆◆◆

मराठी रूपांतर

प्र.१ खालीलपैकी योग्य पर्याय निवडा. १ × १० मार्क

१. वाहनाच्या एक्झोस्टमधून बाहेर पडणारा विषारी वायू आहे

a) मिथेन
b) इथेन
c) कार्बन डाय ऑक्साइड
d) कार्बन मोनॉक्साईड

२. वायूमुळे ओझोनचा थर पातळ होत आहे

a) CO
b) CFCS
c) CO_2
d) NO_2

३. अल निनो ही घटना कशाशी संबंधित आहे ?

a) वातावरणीय बदल
b) वायू प्रदूषण
c) जल प्रदूषण
d) किरणोत्सारी परिणाम

४. स्मॉग' ('Smog) ..... चे मिश्रण आहे

a) धूळ आणि वायू
b) धूर आणि धूळ
c) बर्फ आणि धुके
d) धूर आणि धुके

५. पर्यावरण अभ्यासाला ..... व्याप्ती आहे

a) बहु आणि बहुस्तरीय
b) एकतर्फी
c) महत्वाचे
d) नैसर्गिक

६. पर्यावरण (संरक्षण) कायदा, १९८६ पर्यावरणाच्या .....साठी लागू करण्यात आला.

a) संरक्षण आणि सुधारणा

b) कायदा आणि अंमलबजावणी

c) व्यवस्थापन आणि अर्थव्यवस्था

d) आरोग्य आणि नियमन

७. ..... वन परिसंस्थातील प्राथमिक उत्पादक आहेत

a) बॅक्टेरिया आणि इतर सूक्ष्मजीव

b) मांसाहारी

c) शाकाहारी प्राणी

d) क्लोरोफिल असलेले झाडे आणि वनस्पती

८. वातावरणात ..... च्या प्रतिक्रियेमुळे आम्ल पाऊस होतो

a) वातावरणातील पाणी आणि कार्बन मोनोऑक्साइड

b) सल्फर ओक्साईड आणि वातावरणातील पाणी

c) सल्फ्यूरिक ऐसिड आणि कार्बनडायऑक्साइड

d) नायट्रोजन ऑक्साईड आणि ऑक्सिजन

९. ध्वनी मीटर वापरून आवाज मोजला जातो आणि युनिट ..... आहे

a) हर्ट्स

b) किलोग्राम

c) जूल्य

d) डेसिबल

१०. परिस्थितिकीय उन्नत अनुक्रम समाविष्ट असलेल्या मूलभूत प्रक्रियेचा क्रम आहे .....

a) ओसाड जागेचा विकास स्थैर्य स्पर्धा आणि सहक्रिया शिरकाव प्रतिक्रिया

b) ओसाड जागेचा विकास शिरकाव स्पर्धा आणि सहक्रिया प्रतिक्रिया स्थैर्य

c) शिरकाव ओसाड जागेचा विकास स्पर्धा आणि सहक्रिया प्रतिक्रिया स्थैर्य

d) शिरकाच स्थैर्य स्पर्धा आणि सहक्रिया प्रतिक्रिया ओसाड जागेचा विकास

प्र.२ खालीलपैकी कोणतेही तीन उत्तर द्या. (३ × ५ गुण)

Q.1 तलावाच्या परिसंस्थेच्या संरचनेचे वर्णन करा

Q.2 जंगलतोड परिभाषित करा आणि जंगलतोडीची कारणे सूचीबद्ध करा.

Q.3 मातीची धूप परिभाषित करा आणि कारणे सूचीबद्ध करा.

Q.4 उदाहरणांसह जनुकीय विविधता, प्रजातीय विविधता व परिसंस्था विविधता स्पष्ट करा.

Q.5 सागरी प्रदूषणाची कारणे कोणती?

प्र. ३ कोणत्याही तीनवर लहान टीप लिहा. (३ × ५ गुण)

Q.1 औष्णिक प्रदूषण

Q.2 वाळवंट परिसंस्था

Q.3 परस्थानी संवर्धन

Q.4 हवामानातील बदल

Q.5 धरणांचे फायदे व तोटे सांगा.

प्र.४ वन्यजीव संरक्षण कायद्या १९७२ चे तपशीलवार वर्णन करा. (१० गुण)

किंवा

विविध प्रकारच्या परिस्थितीय मनोरे यांचे योग्य आकृतीसह वर्णन करा

प्र. ५ जागतिक अन्न समस्या स्पष्ट करा आणि आधुनिक शेती पद्धतीचा पर्यावरणावर होणारा परिणाम स्पष्ट करा. (१० गुण)

किंवा

ध्वनी प्रदूषणाची व्याख्या, कारणे, परिणाम आणि नियंत्रणाचे उपाय तपशीलवार सांगा.

प्र. ६ पर्यावरणाची व्याख्या करा आणि बहुविद्याशाखीय विषय म्हणून त्याचे महत्त्व व्याप्ती व स्पष्ट करा. (१० गुण)

किंवा

आपत्ती व्यवस्थापन म्हणजे काय? पूर आणि भूकंप सह स्पष्ट करा.

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Total No. of Pages : 2

MAR-APR-2024 SUMMER EXAMINATION

B.Tech. CBCS

Sub. Name: Structural Mechanics

Sub. Code: 79112

Day and Date: MAY ,03-05-2024 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: **1. Assume suitable data wherever necessary and mention it boldly**
2. Figures to the right indicate full marks

Special Inst.: **Question no 1 and 5 are compulsory and solve any two out of remaining from each section**

Q1) Solve following questions. **[9]**

a. Define Major principal planes and stresses also Minor principal planes and stresses. **[3]**

b. Establish the condition of no tension for Rectangular section. **[3]**

c. State uses of Influence line diagram. **[3]**

Q2) Direct stresses of 120 MPa in tension and 90 MPa in compression are applied to an elastic material at a certain point on planes at right angles to another .If the maximum principle stress is not to be exceed 150 MPa in tension . **[13]**

1. To what shear stress can material be subjected?
2. What is then the maximum resulting shear stress in the material?
3. Also find the magnitude of their other principle stress and its inclination to 120MPa.

Q3) A short hollow pier of 1.2 m square section outside and 1 m square section inside is subjected to a direct load of 100 kN along its midpoint of outer edge. Determine the final stresses at the base of the pier. Draw neat sketch of stress distribution diagram. **[13]**

Q4) A beam ACB 10 m long is fixed at A and is simply supported at B and is provided with an internal hinge at C 5 m from A. Draw the ILD for the following **[13]**

1. B.M. at A
2.Reaction at B
3.Reaction at A

Q5) Solve following questions. **[9]**

a. Explain limitation of Euler's formula for long column. **[3]**

b. Explain the suitability of Conjugate beam Method. **[3]**

c. Write the Torsion formula and its notations. **[3]**

Q6) A strut 2.5 m long is 60 mm in diameter. One end of the strut is fixed while other end is hinged. Find the safe compressive load for the member using Euler's formula, allowing a factor of safety 3.5. Take E = 2.1x 10^5 N/mm2. **[13]**

Q7) Using moment area method, derive the expression for the slope and deflection of cantilever beam loaded with UDL over whole span. Assume uniform flexural rigidity EI. **[13]**

Q8) A hollow shaft is to transmit 300 KW at 80 r.p.m . If the shear stress is not to be exceed 60 N/mm2 and internal diameter is 0.6 of the external diameter. Find the external diameter and internal diameters, assuming that the maximum torque is 1.4 times the mean. **[13]**

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Total No. of Pages : 2

MAR-APR-2024 SUMMER EXAMINATION

B.Tech. CBCS

Sub. Name: Strength Of Material-I

Sub. Code: 63340/73199/77771

Day and Date: MAY ,09-05-2024 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **Assume suitable data wherever necessary and mention it boldly**
2. **Draw neat labbelet diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

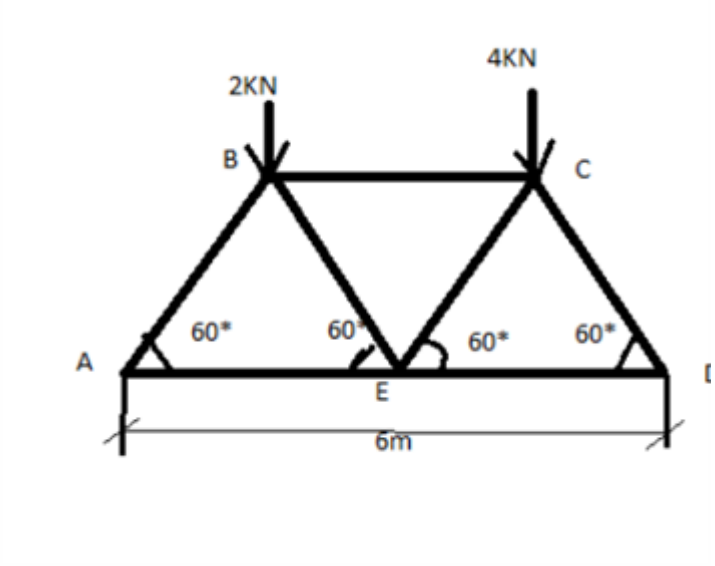
Special Inst.: **Q1 and Q5 are compulsory**
Solve any two from Q2 to Q4 and Q6 to Q8 respectively

Q1) a) Derive the relation between Young's Modulus and Bulk Modulus. (03) **[9]**
b) Explain point of zero shear force and point of contra flexure. (03)
c) Differentiate between method of joint and method of section. (03)

Q2) A square RCC column is 300mm x 300mm in cross section . It is reinforced with 4 bars of 20mm diameter . Determine the load carrying capacity of the column if allowable stresses in concrete and steel are 7MPa and 140MPa respectively. Es=200GPa and modular ratio m=13. **[13]**

Q3) Draw SFD and BMD for a beam ABCD with A as free end , hinge support at B , internal hinge at C and fixed support at D. Span AB is 1m , BC is 3m and CD is 2m. The beam is subjected to udl of 15KN/m over entire span. Also find location of point of contra flexure and maximum bending moment and calculate magnitude of maximum bending moment. **[13]**

Q4) Analyse the truss by using method of joint. **[13]**



Q5) a)Draw shear stress distribution of rectangular , I-section and T- section. **(03)** **[9]**
b) State assumptions made in theory of simple bending. **(03)**
c)Define : i) Strain energy, ii) Modulus of resilance **(03)**

Q6) A cast iron bean of C-section with top flange 150mm x 15mm , bottom flange 200mm x 20mm and web 15mm x 200mm is supported over a span of 6m . If the permissible stresses are 120MPa compression. What udl can be safely applied on beam . What will be tensile stress in beam. **[13]**

Q7) Draw shear stress distribution on a T-section with web 150mm x 15mm deep and flange 200 mmx 20mm wide. The section id symmetric at vertical axis. The shear force applied is 110KN. **[13]**

Q8) Determine the instantaneous stress and deformation of a rod of length 1m and diameter 6mm , if a mass of 50kg falls through a height of 10cm and strikes the bottom of rod . The rod is freely suspended and fixed at the top. Assume E= 210GPa. **[13]**

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