KUMARAGURU
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1984

GENERAL INSTRUCTIONS TO THE CANDIDATES

1. Candidates are instructed to answer the questions as per Bloom's Taxonomy knowledge level (K_1 to K_6)

2. Candidates are strictly instructed not to write anything in the question paper other than their roll number.

3. Candidates should search their pockets, desks and benches and handover to the Hall Superintendent/ Invigilator if any paper, book or note which they may find therein as soon as they enter the examination hall.

4. Candidates are not permitted to bring electronic watches with memory, laptop computers, personal systems, walkie-talkie sets, paging devices, mobile phones, cameras, recording systems or any other gadget / device /object that would be of unfair assistance to him / her.

5. Corrective measures as per KCT examination policies will be imposed for malpractice in the hall like copying from any papers, books or notes and attempting to elicit the answer from neighbours.

B.TECH DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

TEXTILE TECHNOLOGY

U14CET311**:** Basics of Civil Engineering and Mechanics

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The unit of stress in SI units is   CO3 [K_2]

   a) N/mm^2 b) kN/mm^2

   c)   N/m2   d) kN/m^2

2. Which of these statements are correct for a composite section   CO3 [K_1]

   A : The extension in each bar has equal deformation per unit length

   B : The total external load on the composite bar is equal to the sum of the loads carried by

   each different material

   a)   Both A and B are true   b)   A is true but B is false

   c)   Both A and B are false   d)   A is false but B is true

3. Choose the correct sequence of cement flooring   CO2 [K$_1$]

1. Grinding, 2. Mixing, 3. Burning, 4. Cooling and grounding

a) 2-1-4-3   b) 1-2-4-3

c) 1-2-3-4   d) 2-1-3-4

4. Choose the correct sequence of brick manufacturing   CO2 [K$_1$]

1. Moulding Bricks, 2. Preparation of brick clay, 3. Burning of bricks, 4. Drying of bricks

a) 2-1-4-3   b) 1-2-4-3

c) 2-4-1-3   d) 1-2-3-4

5. Which of the following statements are correct   CO3 [K$_2$]

A : Shear force is the algebraic sum of vertical forces at any section of a beam to the right or left of the section

B : Hooks law holds good up to yield point

C : The ratio of shear stress to shear strain is shear modulus

a) A and C   b) A and B

c) A, B and C   d) Only B

6. Examine the two statements and select the answers from the following codes   CO4 [K$_1$]

Assertion(A): Shear force is maximum when bending moment is zero

Reason(R): The rate of change of bending moment is shear force

a) A and R are true and R is correct explanation of A   b) A and R are true but R is not correct explanation of A

c) A is true and R is false   d) Both A and R are false

7. Which of these statements are correct with respect to foundation of structures?   CO2 [K$_1$]

A: The width of the wall is constructed thicker at the base in a stepped fashion.

B: The pile which transfers the load to the soil by friction between pile and the surrounding soil is called friction pile.

C: The pile which transfers the load to a hard rock bed at certain depth is called load bearing pile.

a) A and C   b) B and C

c) A, B and C   d) A and B

8. Examine the two statements and select the answers from the following codes   CO6 [K$_1$]

Assertion(A): The plane section before bending remains plane after bending

Reason(R): The stress is uniform throughout the beam

a) A and R are true and R is correct explanation of A

b) A and R are true but R is not correct explanation of A

c) A is true and R is false

d) Both A and R are false

9. For a solid or a hollow shaft subject to a twisting moment 'T', the torsional shearing stress 'τ' at a distance 'r' and second moment of area 'J' from the centre will be CO6 [K$_2$]

a) $\tau = Tr$

b) $\tau = Tr/J$

c) $\tau = T/J$

d) $\tau = TJ/r$

10. Match the rocks with its type CO2 [K$_1$]

Rocks	Types of rock
A. Granite	1. Metamorphic rock
B. Marble	2. Sedimentary rock
C. Limestone	3. Very tough and hard stone
D. Sand stone	4. Calcareous rock

	A	B	C	D
a)	2	1	4	3
b)	3	1	4	2
c)	2	4	1	3
d)	3	4	1	2

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. Describe the principle of surveying. CO1 [K$_2$]

12. Illustrate the test on properties of cement. CO2 [K$_3$]

13. Explain the various objectives and requirements of good foundation. CO2 [K$_2$]

14. Differentiate interior design and landscaping. CO2 [K$_3$]

15. Calculate the minimum diameter of a steel wire , which is used to raise a load of 4000N if the stress in the rod is not to exceed 95MN/m². CO3 [K$_3$]

16. Differentiate between longitudinal strain and lateral strain. CO3 [K$_2$]

17.	Determine sign conventions for shear force and bending moment.	CO4	[K$_2$]
18.	Draw shear force and bending moment for a cantilever beam of length L fixed at A and carrying a gradually varying load from zero at free end to w per unite length at fixed end.	CO5	[K$_2$]
19.	A solid shaft of 150mm diameter is used to transmit torque. Calculate the maximum torque transmitted by the shaft if the maximum shear tress induced to the shaft is 45 N/mm².	CO6	[K$_2$]
20.	Explain how torsion occur in shaft.	CO6	[K$_2$]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	The following perpendicular offset were taken at 10 m intervals from an Survey line to an irregular boundary line 3.145 m, 4.30 m, 8.20 m, 5.60 m,7.60 m, 4.2m, 5.6m, 4.3 m. Calculate the area enclosed between the survey line, the irregular boundary line, and first and last offsets by the application of	CO1	[K$_3$]
	(i) Average ordinate method (4)		
	(ii) Trapezoidal rule and (5)		
	(iii) Simpson's rule (5)		
22.	Demonstrate with figure about brick masonry and stone masonry in detail.	CO2	[K$_3$]
23.	The ultimate stress, for a hollow steel column which carries an axial load of 1.9MN is 480N/mm². If the external diameter of the column is 200mm, determine the internal diameter. Take the factor of safety as 4.	CO3	[K$_4$]
24.	Draw the shear force and bending moment diagram for a simply supported beam of length 9m and carrying a uniform distributed load of 10kN/m for a distance of 6m from the left end. Also calculate maximum bending moment.	CO5	[K$_4$]
25.	Deduce the equation for shear stress produced in a circular shaft subjected to torsion	CO6	[K$_4$]
26.	Explain briefly different types of bridges and dams with neat sketch.	CO2	[K$_2$]

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