

Reg.No. _____

**Karunya UNIVERSITY**(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)**End Semester Examination – Nov/Dec – 2016**

Code : 14CE3019
Sub. Name : Design of Composite Structures

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Explain the behaviour of composite material also write the benefits of using composite construction.	CO1	20
(OR)				
2.	a.	Analyse the interaction between shear connector and solid slab, also explain the load bearing mechanism of the shear connector.	CO2	20
3.	a.	Design a simply supported composite beam with 10m span. The thickness of the slab is 125mm. The floor is to carry a imposed load of 3kN/m ² , partition load of 1.5kN/m ² and floor finish load of 0.5kN/m ² . Take Construction load as 0.75kN/m ² . $f_{ck} = 30\text{N/mm}^2$.	CO2	20
(OR)				
4.	a.	Design a profiled deck slab of 4.5m span. The thickness of the slab is 125mm. The floor is to carry a imposed load of 2.5kN/m ² , partition load of 1kN/m ² and floor finish load of 1kN/m ² . Take Construction load as 1kN/m ² . $f_{ck} = 30\text{N/mm}^2$. Moment of Inertia of the section – $0.7 \times 10^6 \text{ mm}^4$, Plastic Moment of Resistance – 6 kNm, Area of cross section – 1185mm ² , Depth of the profile – 100mm	CO2	20
5.	a.	Analyse the plastic resistance of a concrete filled square composite column having size of 350x350mm. The height of the column is 3m and is pin ended. Assume M30 grade concrete. Assume the structural steel section as ISHB250@54.7kg/m	CO2	20
(OR)				
6.	a.	Design the composite truss for the following data Span – 9m, Spacing of truss – 4m, Slab thickness – 200mm, Profile depth – 100mm, Self wt of deck slab – 3kN/m ² , Grade of concrete – M20, Max axial tensile force – 600kN, Max axial compressive force – 750kN	CO2	20
7.	a.	Examine the key factors which affects the strength of shear connectors in composite structures?	CO3	20
(OR)				
8.	a.	Write the tests to be conducted to check the strength of the shear connectors	CO3	20
<u>Compulsory:</u>				
9.	a.	Briefly explain the construction or failure of composite structure with example	CO3	20

ALL THE BEST