Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, April/May 2018

Course: Concrete Technology (CEEG 242) **Semester: IV**
Program: B. Tech
Time: 03 hrs. **Max. Marks: 100**

Instructions: Answer all the questions

SECTION A

S. No.		Marks	CO
Q.1	Briefly explains what is responsible for grey color in cement.	**05**	**CO1**
Q.2	Explain the effect of freezing & thawing on durability of concrete	**05**	**CO3**
Q.3	Explain the factors affecting the micro-cracking in concrete	**05**	**CO5**
Q.4	Explain the role of fly ash as mineral admixture	**05**	**CO4**

SECTION B

Q .5	During the course of construction, site engineer found that occurrence of corrosion in the submerged part of a marine reinforced concrete structures is much lesser than upper portion. What could be the probable reason for this? Give your answer with critical comments	**10**	**CO3**
Q.6	Is it desirable to use concrete of very high strength i.e. exceeding 60Mpa. What are the potential problems associated with such high strength concrete for pumping? Give your answers with critical comments	**10**	**CO1 & CO4**
Q.7	If the concrete compression test fails, should non-destructive test be adopted as an alternative test to prove the concrete strength? Give your answer with critical comments with IS Codes.	**10**	**CO5**
Q.8	Why is slump specified in concrete carriageway comparatively low (30mm) when compared with normal concrete (75mm). Can the material for formwork helps to reduce thermal cracks in concrete operations? Give your answers critical comments	**10**	**CO1**
	OR		
Q.9	Calculate the proportion of ingredients of concrete of Grade M20 by using Nominal mix concrete with 20mm size Coarse aggregate & sand conforming to a. Zone I b. Zone II c. Zone III		**CO2**

SECTION-C

Q.10	Design the M40 grade concrete for the following requirements. Missing data should be suitably assumed & mention clearly. Cement Grade: OPC 43 Specific gravity of fly Ash = 2.6 ; Admixture: Naphtha based Superplasticizer;	**20**	**CO2**

SECTION-C			
Q.10	Design the M25 Grade of concrete with the following requirement 1. Cement 43 Grade 2. Exposure: Moderate 3. Zone of Sand: III 4. 20mm m.s.a rounded aggregate 5. Specific gravity of C.A: 2.67 6. Specific gravity of F.A: 2.62 7. Specific Gravity of Cement : 3.12 8. Concrete is pump able	**20**	**CO2**
Q.11	What steps can a designer adopt at the design stage to ensure the durability of reinforced concrete "Offshore structures"		**CO3**
	OR		
Q.12	In designing reservoirs, indirect tensile strength of concrete mix is specified to be less than a specific value (e.g. 2.8N/mm^2) for potable water. Why should engineer put an upper limit of indirect tensile strength? Discuss	**20**	**CO1**