UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Advanced Concrete Structures   MSEG 716   **Semester: I**
Program: M. Tech (Structures)

Time: 03 hrs.   **Max. Marks: 100**
Instructions: **PAPER-I**

SECTION A

S. No.		Marks	CO
Q.1	Discuss the Failure criteria of concrete	5M	CO1
Q.2	Differentiate the behavior of deep beam under loading at top & bottom	5M	CO2
Q.3	How torsion develop in the structure.	5M	CO3
Q.4	State the advantage of redistribution concept in design	5M	CO4

SECTION B

Q.6	Two column, 400mm x 400 mm in section, placed at 5m c/c and transfer load of 800kN and 1200kN respectively under working condition. Design the combined footing for SBC of 150kN/m2. Assuming M20 grade concrete, Fe415 steel	10M	CO4
Q.7	A rectangular beam, 300 mm wide and 450 mm deep reinforced with 3 Nos of 16 mm dia. bars at bottom, provided at an effective cover of 40-mm. Assuming M25 grade of concrete and steel of Fe415 grade. Determine the MR of the beam if a rectangular cut of 80x100 mm at top such a way that divide beam equally.	10M	CO1
Q.8	Design circular slab of clear span 4.5 m supported by 300mm wall for LL of $5kN/m^2$	10M	CO2
Q.9	Design a deep beam 350 mm wide and 4 m deep, simply supported over a clear span of 8 m. The beam carries a live load of 150 kN/m at the service state and supported on walls of 450 mm thick on each side. Use M25 concrete and steel of Fe500 **OR** A continuous beam ABC, fixed at A end and simply supported at C support. The clear distance between supports AB is 5m & BC is 4m with support width 300mm. Design the beam for the live load of 25kN/m. (No need to calculate absolute value of BM)	10M	CO3

SECTION-C

Q.10	A single story community hall of 24 X 10 m is provide in the residential area. The structural arrangement is a portal frame at spacing of 4m.To keep the roof slab thickness 125 mm and finishing 60mm. The parapet wall of 1.2 m height is also provided at the periphery of hall with thickness of 150 mm. Design the end portal, which is fixed at base. The Live load is $5kN/m^2$. (Design of foundation is not required) .Using M25 concrete and Fe 500 steel	20M	CO3

Q.11	A roof of a hall measures 20m x 25 m and consist of 20 panels. Design any panel as flat or grid slab. The live load of $5kN/m^2$. Use M25 & Fe 415 steel **OR** Derive the design constant at critical stage of limit state of collapse of the beam of Triangular shape .	**20M**	**CO1 & CO2** **CO4**