Chandra Pal Gautam.

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2015

B.Tech.VII/ M.Tech Ist Semester

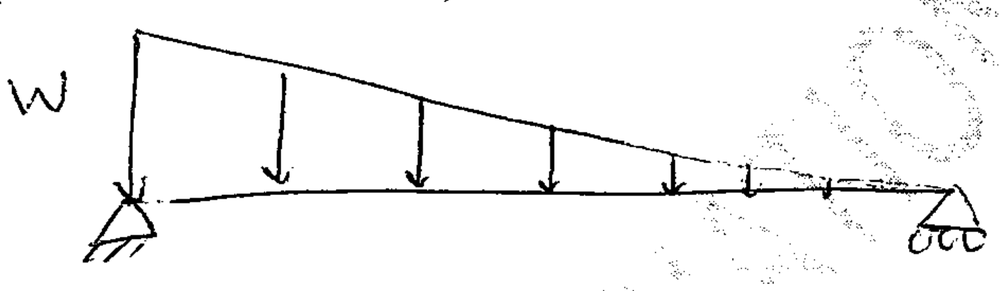
COURSE CODE: 11M1WCE113 MAX. MARKS: 15

COURSE NAME: DESIGN OF REINFORCED CONCRETE STRUCTURES

COURSE CREDITS: 03 MAX. TIME: 1 HR

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q.1. Determine the maximum superimposed triangular load which the beam section 220 mm X 440 mm (clear cover 40 mm) reinforced with total area of tension steel 1256.64 mm^2, can carry if the effective span is 5 m. Use M20 , Fe415 and m = 13.33. **(5)**



Q.2. Define different kind of cracks in RCC structure and the reason behind their presence. **(2)**

Q.3. Why do we provide minimum shear reinforcement and development length? **(2)**

Q.4. Design a RCC beam for shear and flexure having rectangular section of effective span 9 m. The width of the beam is to be 400 mm and total design load is 30 kN/m. Assume M20, Fe415 and m = 13.33. **(6)**

TABLE-3.1
Permissible Shear Stress in Concrete (τ_c)

$p = \frac{100\ A_s}{bd}$	Permissible shear stress in concrete τ_c in N/mm² for various grades of concrete					
	M 15	M20	M 25	M30	M 35	M 40 and above
≤ 0.15	0.18	0.18	0.19	0.20	0.20	0.20
0.25	0.22	0.22	0 23	0.23	0.23	0.23
0.50	0 29	0 30	0.31	0 31	0.31	0.32
0.75	0 34	0 35	0 36	0 37	0.37	0 38
1.00	0 37	0 39	0 40	0.41	0.42	0.42
1.25	0.40	0 42	0 44	0.45	0.45	0 46
1 50	0.42	0.45	0.46	0.48	0.49	0 49
1.75	0.44	0.47	0.49	0.50	0.52	0 52
2.00	0.44	0.49	0.51	0.53	0 54	0.55
2.25	0.44	0.51	0.53	0.55	0 56	0.57
2.50	0.44	0.51	0.55	0.57	0.58	0.60
2.75	0.44	0.51	0.56	0.58	0.60	0.62
3.00 & above	0.44	0.51	0.57	0.60	0.62	0.63