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R-15

Code: 5G644

II B.Tech. II Semester Supplementary Examinations August 2021

Building Planning & Drawing

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

PART-A

Answer all Three units by choosing one question from each unit (3 x 14 = 42 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. a) Explain in detail the factors to be considered for selection of a site for a residential building?	7M	CO1	L4
b) On what considerations, the grouping of various units in residential buildings is made?	7M	CO1	L1
OR			
2. Classify the buildings based on occupancy and type of construction.	14M	CO1	L2

UNIT-II			
3. a) List out different purposes of rooms in a residential building?	7M	CO2	L1,L4
b) Give the standard dimensions for the following rooms of a residential building (i) Veranda (ii) Bed room (iii) Sick room	7M	CO2	L1,L2
OR			
4. a) Write the importance and necessity in planning of industrial buildings?	7M	CO2	L1,L2
b) Explain the principle of planning a hospital.	7M	CO2	L2

UNIT-III			
5. Distinguish between PERT and CPM in detail.	14M	CO3	L4
OR			
6. A project consists of 9 activities, the details are given below.			
(i) Draw network diagram.			
(ii) Find out the critical path and project duration.			
(iii) Compute earliest occurrence time and finish time, latest occurrence and finish time. Also calculate total float, free float and independent float.			

Activity	A	B	C	D	E	F	G	H	I
Predecessor	-	A	A	B,C	A	D,E	C	F,G	H
Duration(in days)	5	9	7	4	8	14	12	6	8

14M CO3 L3 ,L4

PART-B

Answer any one question from the following units (1 x 28 = 28 Marks)

UNIT-IV

7. a) Draw plans of Flemish bond with all the details. 14M CO4 L3
 b) Draw elevation and sectional plan of 0.partly panelled and partly glazed door of size 1200X2000 mm. size. 14M CO4 L3

OR

UNIT-V

8. The line sketch of the plan of a residential building is shown in figure below. Draw:

(a) A neat dimensioned plan.

(b) Sectional elevation along AB, to a suitable scale, using the following specification.

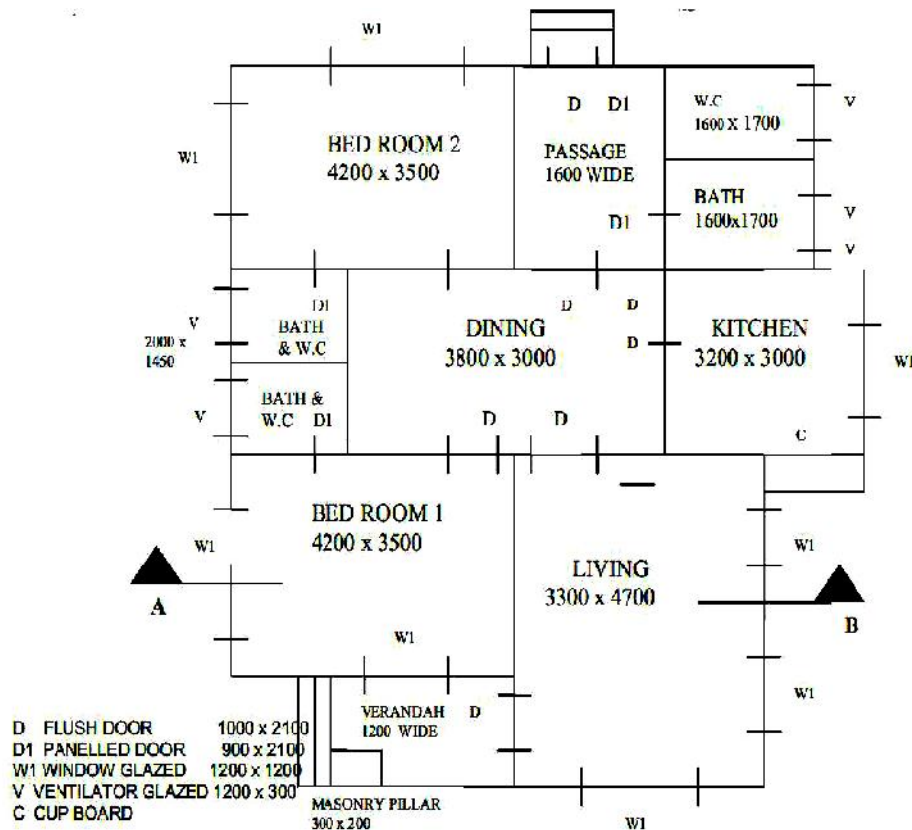
Specifications: Foundations: C.C 1:4:8 800 mm wide and 300 mm thick.

Footings: Rubble stone masonry: 600 mm x 500 mm.

Basement: Coursed rubble masonry: 400 mm wide and 700 mm high.

Superstructure: Brickwork in C.M 1.5:300 mm wide and 300 mm high.

R.O.C roofing: 100mm thick.



28M CO5 L3

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II B.Tech. II Semester Supplementary Examinations August 2021

Hydraulics and Hydraulic Machinery

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

1. Define

- (a) Laminar Boundary Layer (δ_{lam}) (b) Turbulent Boundary Layer (δ_{tur})
(c) Laminar sub-layer(δ^1) (d) Boundary Layer Thickness

OR

2. Find the displacement thickness, the momentum thickness and energy thickness for the velocity distribution in the boundary layer given by $u/U = 2(y/\delta) - (y/\delta)^2$

UNIT-II

3. Prove that $B+2zy/2=y \sqrt{1+z^2}$ is the required condition for a trapezoidal section to be most economical or most efficient (where side slope is 1:z, Depth=y, B=Bottom width of the channel)

OR

4. What do you understand by

- a) Steady and Unsteady flow b) Uniform and Non Uniform flow
c) Laminar flow and Turbulent flow d) Sub-critical flow, critical flow and super critical flow

UNIT-III

5. Show that the force exerted by a jet of water on an inclined fixed plate in the direction of the jet is given by $F_x = \rho a V^2 \sin^2 \theta$

Where a = area of the jet, V=velocity of the jet and θ =inclination of the plate with the jet

OR

6. Find the force exerted by a jet of water on an unsymmetrical moving curved plate when jet strikes tangentially at one of the tips.

UNIT-IV

7. a) What do you mean by gross head, net head and efficiency of turbine? Explain the different type of efficiency of a turbine?

b) Explain clearly the following terms as they are applied to a pelton wheel:

- (i) Gross Head (ii) Net Head

OR

8. a) Explain draft tube theory?

b) Define efficiency of draft tube?

UNIT-V

9. Explain briefly with neat sketches, any two of the following types of casing

- (i) Volute casing
(ii) Vortex casing
(iii) Casing with guide blades/vanes

OR

10. a) How are hydropower plants classified? Explain any one of the type of classification

b) Write about surge tank? Explain why a surge tank is needed in a hydropower plant set up?

Code: 5GC42

II B.Tech. II Semester Supplementary Examinations August 2021

Probability & Statistics
(Common to CE, ME and IT)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

1. a) Define the following (i) Sample Space (ii) event (iii) Outcome (iv) Probability 8M
b) Two marbles are drawn in succession from a box containing 10 red, 30 white, 20 blue and 15 orange marbles, with replacement being made after each drawing. Find the probability that (i) both are white (ii) first is red and second is white. 6M

OR

2. a) State and prove Addition theorem on probability for two events. 8M
b) If two dice are throw , Find the probability of getting a sum is 10 6M

UNIT-II

3. A random variable X has the following probability function

X	0	1	3	4	5	6	7
P(X)	0	K	2K	2K	3K	K ²	7K ² +K

Find the value of K , (ii) Evaluate $p(0 < x < 5)$, (iii) Evaluate $p(x < 5)$ 14M

OR

4. The mean and variance of a binomial variable X with parameters n and p are 16 and 8. Find $P(x = 1)$ and $P(x > 2)$ 14M

UNIT-III

5. A population consists of the four numbers 3, 7, 11, 15. Consider all possible samples of size 2 which can be drawn with replacement from this population. Find the population mean and standard deviation, and mean and standard deviation of the sampling distribution of means. 14M

OR

6. It is desired to estimate the mean number of hours of continuous use until a certain computer will first require repairs. If it can be assumed that $\mu = 48$ hours, how large a sample is needed so that one will be able to assert with 90% confidence that the sample mean is off by at most 10 hours. 14M

UNIT-IV

7. a) A sample of 64 students has a mean weight of 70 kg. can this be regarded as a sample from a population with mean weight 56kg. and standard deviation is 25 kg. 7M
b) In a big city, 325 men out of 600 men were found to be smokers. Thus this information supports the conclusion that the majority of men in the city are smokers. 7M

OR

8. According to the norms established for a mechanical aptitude test, persons who are 18 years old have an average height 73.2 ($\mu = 73.2$) with standard deviation of 8.6 ($\sigma = 8.6$). If 45 ($n = 45$) members randomly selected of that age average 76.7 ($\bar{x} = 76.7$). Test the null hypothesis $\mu = 73.2$, against the alternative hypothesis $\mu > 73.2$ at the 0.01 level of significance. 14M

UNIT-V

9. In an investigation on the machine performance, the following results are obtained

	No. of units inspected	No. of defectives
Machine I	375	17
Machine II	450	22

Test whether there is any significant performance of two machines at $\alpha = 0.05$ 14M

OR

10. 4 coins were tossed 160 times and the following results were obtained,

No. of Heads	0	1	2	3	4
Frequency	17	52	54	31	6

Under the assumption that coins are unbiased, find the expected frequencies of 0,1,2,3,4 heads and test the goodness of fit for $\alpha = 0.05$ 14M

Code: 5G643

II B.Tech. II Semester Supplementary Examinations August 2021

Structural Analysis-I

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

1. Derive the equation for a Fixed beam carrying UDL over the entire span with neat sketch. 14M

OR

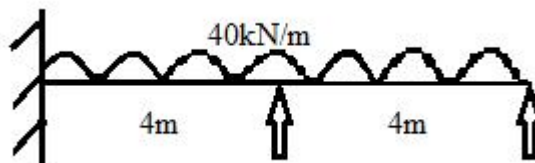
2. A fixed beam AB of length 6m carries a point loads of 160kN and 120kN at a distance of 2m and 4m from the left end of A. Find the Fixed end moments and the reactions at the supports. Draw B.M and S.F diagrams. 14M

UNIT-II

3. A Continuous beam ABC covers two consecutive span AB and BC of lengths 4m and 6m , carrying UDL of 6kN/m and 10kN/m respectively. If the ends A & C are simply supported, find the supports moments at A, B & C. 14M

OR

4. A continuous beam ABC consists of a two consecutive spans AB and BC 4m each and carrying a distributed load of 40kN/m. the end A is fixed and the end C simply supported. Find the support moments and reactions.



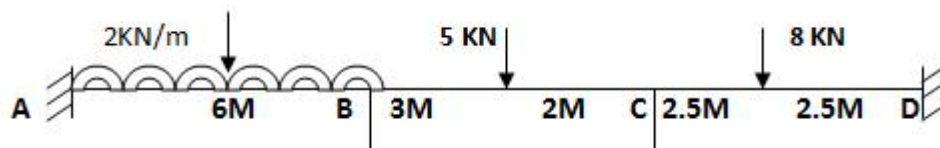
14M

UNIT-III

5. Explain step by step procedure of Moment Distribution method with suitable example. 14M

OR

6. A continuous beam ABCD consists of three span, and loaded as shown in figure. End A & D are fixed. Determine the bending moments at the supports.



14M

UNIT-IV

7. a) What are influence lines? 4M
b) Derive the influence line diagram for an simply supported beam with neat sketch 10M

OR

8. In a simply supported beam AB of span 20m, determine the maximum bending moment and shear forces at a section 5m from A, due to the passage of a UDL of intensity 20kN/m, longer than the span. 14M

UNIT-V

9. Derive Castigliano's first theorem with neat sketch. 14M

OR

10. Find the deflection at the free end of a cantilever of length L carrying a uniform distributed load of W per unit run over the whole span. Assume uniform flexural rigidity. 14M
