Hall Ticket Number :										

R-15

Code: 5G644

II B.Tech. II Semester Supplementary Examinations February 2022

Building Planning & Drawing

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

PART-A

Answer *the following* units by choosing one question from each unit (3 x 14 = 42 Marks)

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UNIT–I

1. a) Write briefly about Open Space Requirements of buildings. 7M

   b) List the areas which have to be included and which have to be excluded while calculating plinth area 7M

OR

2. a) Describe the requirements of different rooms and their grouping in residential buildings 7M

   b) What are the minimum standards for various parts of building as per national building code (NBC) and explain? 7M

UNIT–II

3. Write the importance and necessity in planning of educational institutes. 14M

OR

4. Describe the important departments and facilities to be provided in the layout of a industry 14M

UNIT–III

5. What are the stages of a construction project and construction management team explain by using flow charts? 14M

OR

6. a) What are the features of network planning? Why do we use network planning? Explain in detail 7M

   b) Differentiate between PERT and CPM network methods 7M

PART-B

Answer any **One** Question from the following units (**1 x 28 = 28 Marks**)

UNIT–IV

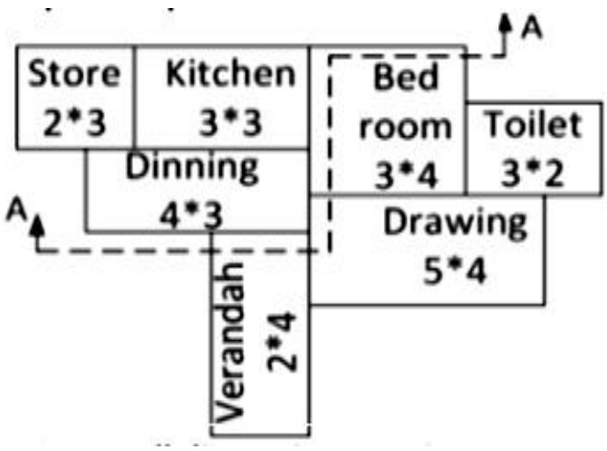
7. a) Draw plan and sectional elevation of a paneled door of size 1.2X2.1m. Indicate all features. 18M

   b) Draw a detailed elevation of a king post truss of 5m clear span. Indicate all features. 10M

OR

UNIT–V

8. Figure in below shows the line drawing of a residential building, draw to a scale of the following (a) Plan (b) Sectional elevation along AA first Cement concrete base 300mm thick and 900mm wide is provided under main walls. Footings are brick wall in CM 1:6, 600mm wide and 300mm deep depth to which main walls are taken below the ground level is 1000mm. Superstructure: Main walls 300mm thick and other walls 200mm thick. Head room 3000mm, Assume suitable footings below verandah. Roofing: 1:2:4; RCC slab 120mm thick Any other data not furnished may be suitably assumed. 28M



Note: All dimensions are in mm

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II B.Tech. II Semester Supplementary Examinations February 2022

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)

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Marks

UNIT–I

1. Prove that, Displacement thickness

$$\delta^* = \int_0^{\infty}\left(1-\frac{u}{U}\right)dy \quad and\ momentum\ thickness = \theta = \int_0^{\infty} u/U\left(1-\frac{u}{U}\right)dy$$ 14M

OR

2. What do you mean by separation of boundary layer? What is the effect of pressure gradient on boundary layer separation? 14M

UNIT–II

3. Determine the most efficient section of a trapezoidal channel with side slopes 1V to 2H, carrying a discharge of 11.25 m^3/s with a velocity of 0.75m/s. What should be the bed slope of the channel?. Take manning's n=0.025 14M

OR

4. A channel is 2m wide at bottom the length of each sloping side is 1.95m, the width of water surface is 5.5m the flow depth is 1.2m and bed slope is 1 in 5280. What is the discharge per minute?. The value of chezy's c for this channel for different values of hydraulic radius R as tabulated below 14M

UNIT–III

5. A jet of water of diameter 75mm moving with a velocity of 30 m/s, strikes a curved fixed plate tangentially at one end at an angle of 30^0 to the horizontal. The jet leaves the plate at an angle of 20^0 to the horizontal. Find the force exerted by the jet on the plate in the horizontal and vertical direction. 14M

OR

6. Force exerted by the jet on the curved plate when the plate is moving in the direction of jet $F_x=\rho a(V-u)^2(1+\cos\theta)$ and also work done by the jet on the plate per second 14M

UNIT–IV

7. a) Describe briefly the function of various main components of pelton turbine with neat sketch. 7M

   b) What is cavitation? How can it be avoided in reaction turbine? 7M

OR

8. A pelton wheel is to be designed for a head of 60m when running at 200r.p.m. The pelton wheel develops 95.6475 KW shaft power. The velocity of the buckets=0.45 times the velocity of the jet, overall efficiency=0.85 and the co-efficient of the velocity is equal to 0.98 14M

UNIT–V

9. Explain briefly the following efficiencies of a centrifugal pump

   i) Manometric Efficiency ii) Volumetric Efficiency

   iii) Mechanical Efficiency iv) Overall Efficiency 14M

OR

10. Derive an expression for the work done by the centrifugal pump (or by impeller) on water 14M

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Hall Ticket Number :										

R-15

Code: 5GC42

II B.Tech. II Semester Supplementary Examinations February 2022

Probability and Statistics

(Common to CE, ME & CSE)

Max. Marks: 70 Time: 3 Hours

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

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UNIT–I

1. a) If $P(A)=\frac{1}{4}$, $P(B)=\frac{1}{3}$ and $P(A\cup B)=\frac{1}{2}$ then evaluate $P(A/B)$, $P(B/A)$, $P(A\cap B')$ and $P(A/B')$ 8M

   b) State and prove Addition theorem on probability for three events. 6M

OR

2. a) State and prove Baye's theorem. 8M

   b) A card is drawn from a well shuffled deck of 52 playing cards. What is the probability of drawing a red king (ii) 3, 4, 5 or 6 (iii) black card. 6M

UNIT–II

3. a) Find the continuous probability function $f(x)=k\,x^2\,e^{-x}$ when $x\geq 0$ find (i) k (ii) mean (iii) variance 7M

   b) A hospital switch board receives an average of 4 emergency calls in a 10 minute interval. What is the probability that
   (i) There are at most 2 emergency calls in a 10 minute interval
   (ii) There are exactly 3 emergency calls in a 10 minute interval 7M

OR

4. a) If a random variable has a poisson distribution such that P (1) = P(2) find (i) Mean of the distribution,(ii) P(4),(iii) $P(x\geq 1)$,(iv) $P(1<x<4)$ 7M

   b) In a normal distribution, 7% are under 35 and 89% are under 63. Find the mean and the standard deviation of the distribution. 7M

UNIT–III

5. A random sample of size 81 taken whose variance is 20.25 and mean is 32, construct 98% confidence interval 14M

OR

6. A population consists of the five numbers 2, 3, 6, 8, 11. 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

UNIT–IV

7. An ambulance services claims that it takes on the average less than 10min to reach its destination in emergency calls. A sample of 36 calls has a mean of 11 min and the variance of 16 min. test the significance 0.05 level. 14M

OR

8. A die is thrown 9000 times and of these 3220 yielded a die is thrown 9000 times and of these 3220 yielded a or 4. i.e., this is consistence with the hypothesis is that die was unbiased. 14M

UNIT–V

9. The number of automobile accidents per week in a certain community are as follows 12, 8, 20, 2, 14, 10, 15, 6, 9, and 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period 14M

OR

10. 200 digits were choose at random from a set of tables. The frequencies of the digits are shown below

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	18	19	23	21	16	25	22	20	21	15

Use the chi-square test to assess the correctness of the hypothesis that the digits were distributed in equal number in the tables from which these were chosen. 14M

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