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B.Tech. 3rd Semester (Civil Engg.) G-Scheme

Examination, November-2023

ECONOMICS FOR ENGINEERS

Paper–HSMC-01-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt **five** questions in all, selecting **one** question from each unit. **Question no. 1 is compulsory**. All questions carries equal marks.*

1. Write short notes in 40-50 words : 6×2.5=15

(i) Law of Demand

(ii) Factors of Production

(iii) Types of Costs

(iv) Features of Monopoly Market

(v) Supply

(vi) Merits of Privatization

Unit-I

2. What do you mean by Demand ? Explain law of demand in detail. 15

3. Define Economics. What is the most acceptable Definition of Economics in your point of view ? 15

Unit-II

4. Explain the following : 3×5=15
   (a) Opportuniy cost
   (b) Marginal cost
   (c) Total cost

5. Define Production. Explain in detail the law of variable proportions. 15

Unit-III

6. What is Perfect Competition Market ? Explain various features of perfect competition market . 15

7. Define Supply. Explain role of demand and supply in price determination. 15

Unit-IV

8. What do you mean by Privatization ? Explain its merits and demerits. 15

9. Write a detailed note on Globalisation of Indian economy. Also explain its merits and demerits. 15

B.Tech. 3rd Semester (Civil Engg.) (G-Scheme)
Examination, November-2023
SURVEYING
Paper - PCC-CE-207-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt **five** questions in all, selecting **one** question from each Unit. **Question no.-1 is compulsory**. All questions carry equal marks.*

1. Explain the following:

(a) Principle of surveying

(b) Prismatic and Surveyor's compass

(c) Temporary adjustments of levels

(d) Differentiate fly leveling and profile leveling

(e) Plane table accessories

(f) Tachometric constants 6×2.5=15

Unit-I

2. (a) A 30 m long steel tape was standardized at a temperature of 20°C and with a pull of 100 N. The tape was measured a distance AB when the temperature was 45° C and pull was 150N. The tape was supported at the ends only. Compute the corrections per tape length if cross-sectional area of tape is 4 mm^2, the unit weight of the tape material is 0.0786×10^{-3} N/mm^3, E = 2.109×10^{6} KN/m^2 and co-efficient of expansion of tape per $1^{\circ}C = 11.5\times10^{-6}$. 8

(b) Define surveying. Explain the classification of surveying in detail. 7

3. What is Local attraction? How is it detected and eliminated? The following bearing were taken in running a compass survey:

Line	F.B.	B.B
AB	124°30'	304°30'
BC	68°15'	246°
CD	310°30'	135°15'
DA	200°15'	17°45'

At what stations do you suspect Local attraction? Compute the correct bearing of the lines and also compute the included angles. 15

Unit-II

4. (a) The following staffs were observed successively with a level, the instrument having been moved after third and sixth readings:

1.585, 1.315, 2.305, 1.325, 1.065, 1.815 and 2.385m

Enter the above reading in page of level book and Calculate the R.L. of remaining points if the first reading was taken with a staff held on a bench mark of 216.0950m. 8

(b) What is reciprocal leveling? Explain the procedure of reciprocal leveling. 7

5. Derive a relationship for axis signal correction. 15

Unit-III

6. (a) Describe various methods of plane table survey. 7.5

(b) State and solve 2-point problem. Under what circumstances the problem is solved? 7.5

7. For a closed traverse ABCDA, the bearings of lines BC and CD could not be measured due to an obstruction. Determine the missing bearings from the following data: 15

Line	Length (m)	W.C.B
AB	550	60°00'
BC	1200	?
CD	880	?
DE	1050	310°00'

Unit-IV

8. Describe the fixed hair and movable hair methods of Stadia Tachometry with their expressions. 15

9. (a) What are transition curve? Where they are provided? Derive formula to find out Length of Transition Curve. 7.5

(b) Two tangents meet at chainage 1022 m; the deflection angle is 36°. A circular curve of radius 300 m is introduced in between them. Find the following: 7.5

(i) Tangent Length

(ii) Chainage of the tangent points

(iii) Length of the circular curve

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B.Tech. 3rd Semester (Civil Engg.) (G-Scheme)

Examination, November-2023

INTRODUCTION TO CIVIL ENGINEERING

Paper–PCC-CE-201-G

Time allowed : 3 hours] *[Maximum marks : 75*

Before answering the questions, condidate should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : *Attempt **five** questions in all, selecting one question from each section. **Question no. 1 is compulsory**. All questions carries equal marks.*

1. Describe the following : 15

(a) Glass Block Masonry

(b) Varnishes

(c) Fasteners for doors

(d) Cavity wall

(e) Fire Resisting construction

Section–A

2. Explain social, economic, environmental impact of civil engineering on society. 15

3. What is stone masonry and explain its classification? 15

Section–B

4. Explain the manufacturing process of tiles and types of tiles. 15

5. Explain the different types of timbers used in civil engineering. 15

Section–C

6. (a) Explain king post truss and queen truss in detail with the help of diagram. 7.5

   (b) What are the fixtures and fasteners used for doors and windows. 7.5

7. Explain in detail different types of foundations used in constructions. 15

Section–D

8. Explain the method of waterproofing and waterproofing treatment of roof. 15

9. Explain the classification, measurement and transmission of sound. 15

B.Tech (Civil Engg.) 3rd Semester (G-Scheme)

Examination, November–2023

MATHEMATICS–III

Paper–BSC-MATH-205 G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt **five** questions in total by selecting **one** question from each unit. **Question No. 1 is compulsory.***

1. (a) Solve $y^2zp + x^2zq = y^2x$. 15

(b) Write Lagrange's formulae for interpolation.

(c) Define Laplace Transform and state Convolution theorem.

(d) Find the number of permutations of the letters of the word ALLAHABAD.

Unit–I

2. (a) Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$. 15

(b) Solve $2xz - px^2 - 2qxy + pq = 0$ by Charpit's method.

3. A tightly stretched string with fixed end points $x = 0$ and $x = \ell$ is initially in a position given by $y = y_0 \sin^3 \frac{\pi x}{\ell}$. If it is released from rest from this position, find the displacement $y(x, t)$. 15

Unit–II

4. Find a root of $x^3 - x^2 - 1 = 0$ by using

   (i) Bisection method

   (ii) Newton Raphson method. 15

5. Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using

   (i) Trapezoidal Rule

   (ii) Simpson's $\frac{1}{3}$rd rule 15

Unit–III

6. Find Laplace Transform of 15

   (i) $t^3 e^{-3t}$

(ii) Periodic function $f(t) = \sin wt, \quad 0 < t < \frac{\pi}{w}$

$= 0 \quad , \frac{\pi}{w} < t < \frac{2\pi}{w}$.

(iii) $\frac{1 - e^t}{t}$

7. (a) Find inverse Laplace Transform of $\frac{4s+5}{(s-1)^2(s+2)}$. 15

(b) Apply Convolution theorem to evaluate inverse Laplace Transform of $\frac{1}{(s^2+1)(s^2+9)}$.

Unit–IV

8. Write short note on : 15

(i) Pigeon-hole principle

(ii) Group

(iii) Permutations

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9. Explain the following with the help of suitable examples : 15

(i) Cyclic group

(ii) Normal subgroup.

B.Tech. 3rd Semester G-Scheme (Civil Engg.)

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FLUID MECHANICS

Paper–PCC-CE-205-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt any **five** questions in all, selecting **one** question from each unit. **Question no. 1 is compulsory**. All questions carry equal marks.*

1. Explain the following : 6×2.5=15

(a) Surface Tension and Capillarity

(b) Pascal's Law and Manometer

(c) Buoyancy and Center of Pressure

(d) Uniform and Non-Uniform flow

(e) Similar and Distorted model

(f) Orifice meter and Pitot tube

Unit-I

2. What is Capillarity ? Explain the phenomenon of Capillarity with diagram. Derive an expression for capillary depression in mercury. 15

3. Calculate the dynamic of viscosity of an oil, which is used for lubrication between square plate of

size 0.9m × 0.9m and an inclined plane with angle of inclination of 30°. The weight of square plate is 350N and its slides down the inclined plane with uniform velocity of 0.4m/sec. The thickness of oil film is 1.6mm. 15

Unit-II

4. What is meant by intensity of pressure ? How it varies with the depth of fluid. 15

5. A solid cylinder of 12cm diameter and 45cm long, consists of two parts of different mateials. The first part of the base is 1cm long and specific gravity = 5.0. The other part of cylinder is made of the material having specific gravity 0.6. State, if it can float vertical in water. 15

Unit-III

6. Define and distinguish between stream line, path line and streak line. What is meaning of flow net ? Can flow be used very near to boundary. 15

7. Water is flowing through a pipe having diameter 250mm and 150mm at the bottom and upper end respectively. The intensity of pressure at the bottom

end is 24.5N/cm² and the pressure at the upper end is 9.81N/cm². Determine the difference in datum head if the rate of flow through pipe is 40 lit /sec. 15

Unit-IV

8. Define displacement thickness. Derive an expression for the displacement thickness. 15

9. Explain the different types of hydraulic similarities that must exist between a prototype and its model. 15