

Hall Ticket Number :

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R-11

Code : 1GC43

Last Chance Special Supplementary Examinations

II B.Tech. II Semester Supplementary Examinations July 2021

Environmental Science

(Mechanical Engineering)

Max. Marks: 70

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (14 Marks each)

1. a) Briefly explain scope and importance of environmental studies. 7M
b) Explain about the ways to create public awareness in environmental issues. 7M
2. a) Discuss the benefits and problems of dams. 6M
b) Discuss about the equitable use and conservation of natural resources. 8M
3. a) What are the environmental hazards associated with mineral extraction. 7M
b) Discuss, we live in a world where in natural resources are limited? 7M
4. a) What is air pollution? What are the sources of air pollutants? What are their effects on human health? 8M
b) Write short notes on solid-waste disposal. 6M
5. a) Define an ecosystem. Give an account of the structure and functions of an ecosystem. 7M
b) Discuss the structure and functions of forest ecosystem 7M
6. a) Describe productive and consumptive values of biodiversity 8M
b) India is one of the megadiversity nations. Explain. 6M
7. a) What is rainwater harvesting? Name and discuss in brief the types of rainwater harvesting. 7M
b) What are the gases are responsible for global warming? List them. Write their effects and control measures. 7M
8. a) Explain the term population explosion. Enumerate its effects. 7M
b) Discuss the strategy adopted by government of India for the development of women and children. 7M

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R-11

Code : 1G541

Last Chance Special Supplementary Examinations

II B.Tech. II Semester Supplementary Examinations July 2021

Kinematics of Machinery

(Mechanical Engineering)

Max. Marks: 70

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (14 Marks each)

1. What do you mean by inversion of a mechanism? Explain with sketches all inversions of quadric cycle chain. 14M
2. Draw a neat sketch of a Davis steering gear, and show that it satisfies the condition for correct steering in all positions. 14M
3. In a four-bar chain ABCD, AD is fixed and is 150 mm long. The crank AB is 40 mm long and rotates at 120 r.p.m. clockwise, while the link CD = 80 mm oscillates about D. BC and AD are of equal length. Find the angular velocity of link CD when angle BAD = 60°. 14M
4. Draw and explain Klien's construction for determining the velocity and acceleration of the piston in a slider crank mechanism. 14M
5. A cam is to be designed for a knife edge follower with the following data:
 1. Cam lift = 40 mm during 90° of cam rotation with simple harmonic motion.
 2. Dwell for the next 30°.
 3. During the next 60° of cam rotation, the follower returns to its original position with simple harmonic motion.
 4. Dwell during the remaining 180°.Draw the profile of the cam when the line of stroke is offset 20 mm from the axis of the cam shaft. The radius of the base circle of the cam is 40 mm. Determine the maximum velocity and acceleration of the follower during its ascent and descent, if the cam rotates at 240 r.p.m. 14M
6. a) Explain the terms: (i) Module, (ii) Pressure angle, and (iii) Addendum. 6M
b) Derive an expression for the minimum number of teeth required on the pinion in order to avoid interference in involute gear teeth when it meshes with wheel. 8M
7. a) Explain the phenomena of slip & Creep in belt drives 7M
b) Derive the condition for transmitting the maximum power in a flat belt drive. 7M
8. a) What do you understand by 'gear train'? Discuss the various types of gear trains. 7M
b) Two parallel shafts, about 600 mm apart are to be connected by spur gears. One shaft is to run at 360 r.p.m. and the other at 120 r.p.m. Design the gears, if the circular pitch is to be 25 mm. 7M
