# OP JINDAL UNIVERSITY, RAIGARH (C.G.)

OPJU

UNIVERSITY OF STEEL TECHNOLOGY AND MANAGEMENT

## END SEMESTER BACKLOG EXAMINATION, JANUARY-2022

Course : **B.Tech**

Time : **03 Hrs**

Semester:$2^{nd}$

Max. Marks : **100**

Subject Code: SOE-B-FY201

Subject: Mathematics-II

**Note: Section A :** All Questions are compulsory.  [10 x 02 marks]
**Section B :** Answer any 8 questions.  [08 x 05 marks]
**Section C :** Answer any 5 questions [05 x 08 marks]

| Q. No. | Section [A] | CO |
|---|---|---|
| Q1 a) | Define Integrating factor with example. | CO1 |
| Q1 b) | Solve $(D-2)^2 = 0$. | CO3 |
| Q1 c) | Define general solution, particular solution. | CO3 |
| Q1 d) | Define order and degree of the differential equation | CO1 |
| Q1 e) | Define Clairaut's equation. | CO1 |
| Q1 f) | Define even and odd function with example. | CO7 |
| Q1 g) | Write the formulae for Fourier Sine Series and Fourier Cosine Series. | CO7 |
| Q1 h) | Find the particular integral of $\dfrac{d^2 y}{dx^2} - a^2 y = e^{ax}$ | CO5 |
| Q1 i) | Solve the following equation $\dfrac{\partial^2 z}{\partial x^2} = xy.$ | CO6 |
| Q1 j) | Write the formula for two dimensional Laplace equation and three dimensional Laplace equation.. | CO9 |

| Q. No. | Section [B] | CO |
|---|---|---|
| Q2 a) | Using the method of variation of parameters, solve $$y'' - 2y' + y = e^x \log x$$ | CO3 |
| Q2 b) | Solve $(x^2 - 4xy - 2y^2)dx + (y^2 - 4xy - 2x^2)dy = 0$ | CO1 |
| Q2 c) | Employing the appropriate method to solve the equation $y = 2px - p^2$. | CO2 |
| Q2 d) | Solve the following simultaneous equations $\dfrac{dx}{dt} + 2y = e^t$ $\dfrac{dy}{dt} - 2x = e^{-t}$ | CO4 |
| Q2 e) | Expand $f(x) = x$ as a Fourier series $(0, \pi)$. | CO7 |

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| Q2 f) | Obtain the constant term and the coefficient of the first sine and cosine terms in the Fourier expansions of y from the given data:<br><br>x: 0   1    2    3    4    5<br>y: 4   8   15   7   6   2 | CO8 |
| Q2 g) | Solve $\dfrac{\partial^2 z}{\partial y \partial x} = xy$. | CO5 |
| Q2 h) | Solve $(p^2 + q^2)z^2 = x^2 + y^2$ | CO5 |
| Q2 i) | Solve $(D^2 + DD' - 6D'^2)z = y\sin x$ | CO5 |
| Q2 j) | Solve the equation $3\dfrac{\partial u}{\partial x} + 2\dfrac{\partial u}{\partial y} = 0, u(x,0) = 4e^{-x}$. | CO10 |

| Q. No. | Section [C] | CO |
|---|---|---|
| Q3 a) | Solve the equation $\dfrac{d^2 y}{dx^2} + 4\dfrac{dy}{dx} + 4y = 3\sin x + 4\cos x,\ y(0) = 1,\ y'(0) = 0$ | CO2 |
| Q3 b) | Solve $y(xy + 2x^2 y^3)dx + x(xy - x^2 y^2)dy = 0$ | CO1 |
| Q3 c) | Find the Fourier series of the function $f(x) = \begin{cases} 0, & -\pi < x < 0 \\ \sin x, & 0 < x < \pi \end{cases}$. | CO7 |
| Q3 d) | Find the Fourier series of the function $f(x) = \sqrt{1 - \cos x},\ 0 < x < 2\pi$. Hence show that $\dfrac{1}{1.3} + \dfrac{1}{3.5} + \dfrac{1}{5.7} + \dots\dots = \dfrac{1}{2}$. | CO7 |
| Q3 e) | Solve $\dfrac{\partial^2 y}{\partial x^2} - 3\dfrac{\partial y}{\partial x} + 2y = xe^{3x} + \sin 2x$. | CO5 |
| Q3 f) | Solve $(D^4 - 1)y = e^x \cos x$. | CO6 |
| Q3 g) | Derive the solution of wave equation. | CO9 |

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| | Course Code: SOE-B-ME202 | | | |
|---|---|---|---|---|

## O P JINDAL UNIVERSITY
### BTECH II Semester Backlog Examinations
### ENGINEERING MECHANICS
MECHANICAL ENGINEERING

Time: 3 Hrs.                                                                 Max. Marks: 100

Answer any one question from each unit
All questions carry equal marks

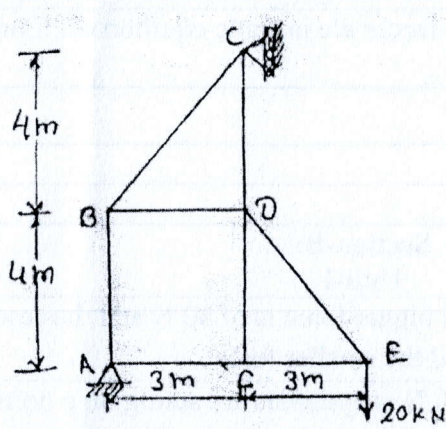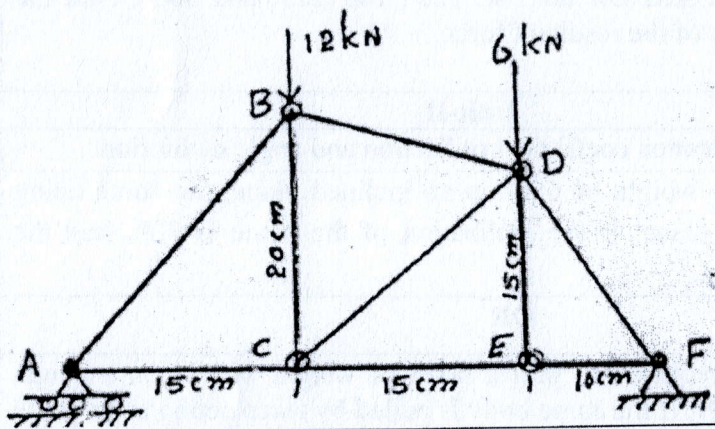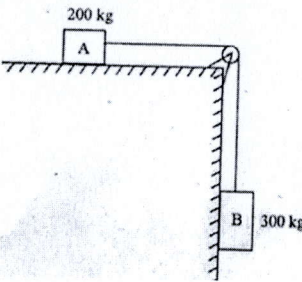| | | | M | CO | KL |
|---|---|---|---|---|---|
| | | **Section-A** | | | |
| 1 | a. | Define Rigid and deformable body. | 2 | 1 | 1 |
| | b. | What is static body? | 2 | 1 | 1 |
| | c. | Write Static Equilibrium conditions? | 2 | 2 | 1 |
| | d. | State Varignon's theorem. | 2 | 2 | 1 |
| | e. | Write short notes on Lami's theorem. | 2 | 3 | 1 |
| | f. | Two forces of 30N and 60N are acted at an angle 120°, find the resultant force. | 2 | 3 | 1 |
| | g. | Three equal concurrent and coplanar forces are in static equilibrium. Find the angle between each force. | 2 | 4 | 1 |
| | h. | Define cone of friction. | 2 | 4 | 1 |
| | i. | Define a perfect truss. | 2 | 5 | 1 |
| | j. | What are support reactions? | 2 | 5 | 1 |
| | | **Section-B:** | | | |
| | | **Unit-I** | | | |
| 2 | a. | Two forces act an angle of 120°. The bigger force is of 40 N and the resultant is perpendicular to the smaller one. Find the smaller force | 6 | 1 | 2 |
| | b. | Four forces of 8 N, 12 N, 15N and 20 N magnitudes are acting on a point at 30° 70° 120° and 150° angles respectively from a fixed direction. Find magnitude and direction of their resultant force. | 10 | 1 | 3 |
| | | **OR** | | | |
| | c. | Pull of 10 N, 20 N, 30 N, 40 N and 50 N are acting at a point. The inclinations of these forces with the axis OX are 30°, 120°, 180°,225° and 300°. Find the magnitude and direction of the resultant force. | 10 | 1 | 3 |
| | | **Unit-II** | | | |
| 3 | a. | Estimate relationship between coefficient of friction and angle of friction. | 6 | 2 | 2 |
| | b. | A force of 40N pulls a weight of 60N up an inclined plane, the force being applied parallel to the plane. If the inclination of the plane is 30°. find the coefficient of the friction. | 10 | 2 | 3 |
| | | **OR** | | | |
| | c. | The horizontal forces required to pull a body of weight 100 N on a rough horizontal surface is 20N. If the same body is pulled by force acting at an angle 15° with the horizontal determine the magnitude of the force. | 10 | 2 | 3 |

## Unit-III

| | | | | |
|---|---|---|---|---|
| | a. | Define moment of inertia. State and prove the perpendicular axis theorem. | 6 | 3 | 2 |
| 4 | b. | An I section has the following dimensions in mm units:<br><br>Bottom flange = 300 × 100<br>Top flange = 150 × 50<br>Web = 300 × 50, find $I_{xx}$. | 10 | 3 | 3 |
| | | **OR** | | | |
| | c. | A T-section has 120mm×15mm flange and 180mm×15mm web. Find $I_{xx}$. | 10 | 3 | 3 |

## Unit-IV

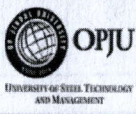| | | | | |
|---|---|---|---|---|
| | a. | What do you mean by parallel force systems? Give 2 examples. | 6 | 4 | 2 |
| 5 | b. | Find the nature and magnitude of the forces in all the member of the truss shown below:<br><br> | 10 | 4 | 3 |
| | | **OR** | | | |
| | c. | Use method of section and find the forces in the members BD, CD and CE of truss.<br><br> | 10 | 4 | 3 |

| | | UNIT-V | | | |
|---|---|---|---|---|---|
| 6 | a. | Explain D'Alembert's principle. Illustrate this principle by taking an example of motion of two bodies connected by a string. | 6 | 5 | 2 |
| | b. | An elevator has a downward acceleration of $1m/s^2$. What pressure will be transmitted to the floor of the elevator by a man weighing 500N travelling in the lift? Find the pressure if the elevator had an upward acceleration of $1m/s^2$. | 10 | 5 | 3 |
| | | **OR** | | | |
| | c. | Two blocks are joined by an inextensible cable. If the system is released from rest, determine the velocity of block A after it has moved 2m. Assume $\mu$ between block A and horizontal plane is 0.25.  | 10 | 5 | 3 |

UNIT-V

Explain D'Alembert's principle. Illustrate this principle by taking an example of motion of two bodies connected by a string.

An elevator has a downward acceleration of 1m/s². What pressure will be transmitted to the floor of the elevator by a man weighting 500N travelling in the lift. Find the pressure if the elevator had an downward acceleration of 1m/s².

OR

Two bodies are joined to an inextensible cable. If the system is released from rest, determine the velocity of block A, after it has moved 3m. Assume μ between block A and horizontal plane is 0.25.

| | Course Code: SOE-B-FY202 |
|---|---|

# O P JINDAL UNIVERSITY
### B.Tech. II Semester Lateral Entry Examinations
## PHYSICS-II
(Offered to B.Tech.)

| Time: 3 Hrs. | | | Max. Marks: 100 | | |
|---|---|---|---|---|---|

**Answer any one question from each unit**
**All questions carry equal marks**

| | | | M | CO | KL |
|---|---|---|---|---|---|
| | | **Section-A** | | | |
| 1 | a. | Write properties of X-rays. | 2 | CO1 | K1 |
| | b. | What is nuclear fussion? Give example | 2 | CO1 | K1 |
| | c. | Write down formulae of velocity of addition. | 2 | CO2 | K1 |
| | d. | What is Gauss law? | 2 | CO3 | K1 |
| | e. | Give the physical significance of divergence of a vector field. | 2 | CO3 | K1 |
| | f. | Give physical significance of wavefunction. | 2 | CO4 | K1 |
| | g. | Write down the wavefunction for a free particle. | 2 | CO4 | K1 |
| | h. | What is the creationist theory on origin of universe? | 2 | CO4 | K1 |
| | i. | What is time dilation? | 2 | CO2 | K1 |
| | j. | Photon has rest mass zero. Then how does photon has energy? | 2 | CO2 | K1 |
| | | **Section-B:** **Unit-I** | | | |
| 2 | a. | Describe the origin of characteristics X-rays using suitable diagrams. Differentiate between the continuous and characteristics X-rays. | 10 | CO1 | K3 |
| | b. | Discuss properties of nuclear force. | 6 | CO1 | K2 |
| | | **OR** | | | |
| 3 | a. | C-N cycle and P-P cycle for stellar energy. | 10 | CO1 | K3 |
| | b. | Derive Bragg's relation $2d \sin\theta = n\lambda$. | 6 | CO1 | K2 |
| | | **Unit-II** | | | |
| 4 | a. | Derive $E^2 = m_0^2 c^4 + p^2 c^2$ | 10 | CO2 | K3 |
| | b. | Discuss inertial and non-inertial frames of references with examples. | 6 | CO2 | K2 |
| | | **OR** | | | |
| 5 | a. | Describe Michelson-Morley experiment and explain its negative results. | 10 | CO2 | K3 |
| | b. | Suppose an electron is moving with velocity v. Calculate the value of v if the kinetic energy of the particle is equal to double of its rest mass energy. | 6 | CO2 | K2 |
| | | **Unit-III** | | | |

| 6 | a. | Write down Maxwell's equations for conducting medium and find out the expression of phase velocity and skin depth. | 10 | CO3 | K3 |
|---|---|---|---|---|---|
|   | b. | Write down the Maxwell's equations in differential and integral forms. | 6 | CO3 | K2 |
| | | **OR** | | | |
| 7 | a. | Derive Maxwell's third and fourth equations in differential forms. | 10 | CO3 | K3 |
|   | b. | Using Maxwell's equations, prove that electromagnetic waves are transverse waves. | 6 | CO3 | K2 |

## Unit-IV

| 8 | a. | Consider particle in finite 1-D box of length L and derive the expressions for wavefunctions. Sketch the wavefunctions of ground state, first excited state and second excited state. | 10 | CO4 | K3 |
|---|---|---|---|---|---|
|   | b. | Describe phase and group velocity. | 6 | CO4 | K2 |
| | | **OR** | | | |
| 9 | a. | Consider a particle confined in an one dimensional box of length a. Write down the wavefunction of ground state. Determine the probability of finding the particle for 0<x<a. | 10 | CO4 | K3 |
|   | b. | Prove that group velocity is equal to the particle velocity. | 6 | CO4 | K2 |

## UNIT-V

| 10 | a. | Describe steady state theory and the pulsating theory. | 10 | CO4 | K3 |
|---|---|---|---|---|---|
|   | b. | Discuss evidences of big bang theory. | 6 | CO4 | K2 |
| | | **OR** | | | |
| 11 | a. | Discuss Hawking's theory about universe. | 6 | CO4 | K2 |
|   | b. | How does large hadron collider (LHC) work? | 10 | CO4 | K3 |

# O P JINDAL UNIVERSITY
### B.Tech. II Semester Lateral Entry Examinations
### PHYSICS-II
(Offered to B.Tech.)

Time: 3 Hrs.  
Max. Marks: 100

Answer any one question from each unit  
All questions carry equal marks

|   |   |   | M | CO | KL |
|---|---|---|---|----|----|
| | | **Section-A** | | | |
| 1 | a. | Write properties of X-rays. | 2 | CO1 | K1 |
| | b. | What is nuclear fussion? Give example | 2 | CO1 | K1 |
| | c. | Write down formulae of velocity of addition. | 2 | CO2 | K1 |
| | d. | What is Gauss law? | 2 | CO3 | K1 |
| | e. | Give the physical significance of divergence of a vector field. | 2 | CO3 | K1 |
| | f. | Give physical significance of wavefunction. | 2 | CO4 | K1 |
| | g. | Write down the wavefunction for a free particle. | 2 | CO4 | K1 |
| | h. | What is the creationist theory on origin of universe? | 2 | CO4 | K1 |
| | i. | What is time dilation? | 2 | CO2 | K1 |
| | j. | Photon has rest mass zero. Then how does photon has energy? | 2 | CO2 | K1 |
| | | **Section-B:** **Unit-I** | | | |
| 2 | a. | Describe the origin of characteristics X-rays using suitable diagrams. Differentiate between the continuous and characteristics X-rays. | 10 | CO1 | K3 |
| | b. | Discuss properties of nuclear force. | 6 | CO1 | K2 |
| | | **OR** | | | |
| 3 | a. | C-N cycle and P-P cycle for stellar energy. | 10 | CO1 | K3 |
| | b. | Derive Bragg's relation 2d sinθ = nλ. | 6 | CO1 | K2 |
| | | **Unit-II** | | | |
| 4 | a. | Derive $E^2 = m_0^2 c^4 + p^2 c^2$ | 10 | CO2 | K3 |
| | b. | Discuss inertial and non-inertial frames of references with examples. | 6 | CO2 | K2 |
| | | **OR** | | | |
| 5 | a. | Describe Michelson-Morley experiment and explain its negative results. | 10 | CO2 | K3 |
| | b. | Suppose an electron is moving with velocity v. Calculate the value of v if the kinetic energy of the particle is equal to double of its rest mass energy. | 6 | CO2 | K2 |
| | | **Unit-III** | | | |

| | | | | | |
|---|---|---|---|---|---|
| 6 | a. | Write down Maxwell's equations for conducting medium and find out the expression of phase velocity and skin depth. | 10 | CO3 | K3 |
| | b. | Write down the Maxwell's equations in differential and integral forms. | 6 | CO3 | K2 |
| | | **OR** | | | |
| 7 | a. | Derive Maxwell's third and fourth equations in differential forms. | 10 | CO3 | K3 |
| | b. | Using Maxwell's equations, prove that electromagnetic waves are transverse waves. | 6 | CO3 | K2 |

## Unit-IV

| | | | | | |
|---|---|---|---|---|---|
| 8 | a. | Consider particle in finite 1-D box of length L and derive the expressions for wavefunctions. Sketch the wavefunctions of ground state, first excited state and second excited state. | 10 | CO4 | K3 |
| | b. | Describe phase and group velocity. | 6 | CO4 | K2 |
| | | **OR** | | | |
| 9 | a. | Consider a particle confined in an one dimensional box of length a. Write down the wavefunction of ground state. Determine the probability of finding the particle for $0<x<a$. | 10 | CO4 | K3 |
| | b. | Prove that group velocity is equal to the particle velocity. | 6 | CO4 | K2 |

## UNIT-V

| | | | | | |
|---|---|---|---|---|---|
| 10 | a. | Describe steady state theory and the pulsating theory. | 10 | CO4 | K3 |
| | b. | Discuss evidences of big bang theory. | 6 | CO4 | K2 |
| | | **OR** | | | |
| 11 | a. | Discuss Hawking's theory about universe. | 6 | CO4 | K2 |
| | b. | How does large hadron collider (LHC) work? | 10 | CO4 | K3 |

# OP JINDAL UNIVERSITY, RAIGARH (C.G.)

## END SEMESTER (BACKLOG) EXAMINATION, JANUARY-2023

Course: **B. Tech.**                                                                 Time: **02 Hrs.**

Semester: **II**                                                                         Max. Marks: **50**

Subject Code: **SOE-B-FY207**                    Subject: **Environmental Studies**

**Note:** **Section A:** All Questions are compulsory [05 x 02 marks]

   **Section B:** Answer any 4 questions [04 x 04 marks]

   **Section C:** Answer any 3 questions [03 x 08 marks]

| Q. No. | Section [A] | CO |
|--------|-------------|----|
| Q1 a) | Define productivity. | 1 |
| Q1 b) | State the importance of Biodiversity. | 2 |
| Q1 c) | Define Green House Effect. | 1 |
| Q1 d) | What is the objectives of Tertiary Treatment of wastewater? | 3 |
| Q1 e) | What is 4R Strategy in SWM? | 3 |

| Q. No. | Section [B] | CO |
|--------|-------------|----|
| Q2 a) | Classify consumers. Give example of each class. | 1 |
| Q2 b) | Differentiate between renewable and non-renewable resources. Give example | 1 |
| Q2 c) | What are primary air pollutants? Give example | 1 |
| Q2 d) | Write the importance of SWM. | 4 |
| Q2 e) | Define Sustainable Development. Write two important characteristics of Indicators of SD. | 5 |
| Q2 f) | Define Food chain. Discuss its types with suitable example. | 1 |
| Q2 g) | What do you mean by Climax Community? How to identify it? | 1 |
| Q2 h) | State briefly the impacts of population explosion. | 4 |

| Q. No. | Section [C] | CO |
|--------|-------------|----|
| Q3 a) | What is the importance of Ozone layer in Stratosphere? Discuss the reason and mechanism of its depletion. | 3 |
| Q3 b) | What do you mean by Bio-diversity? Discuss various Threats & Conservation techniques. | 4 |
| Q3 c) | Write short notes on:<br>   a.  Acid Rain | 3 |

| | b.  BOD and its measurement | |
|---|---|---|
| Q3 d) | Write notes on:<br><br>  i.    Single channel energy flow model<br><br>  ii.   Preliminary treatment of wastewater | 4 |
| Q3 e) | What is soil pollution? Discuss briefly their effect on human health and strategies of protecting soil. | 4 |
| Q3 f) | Write notes on:<br><br>  a.  Egg of Sustainability model of SD<br><br>  b.  Family Welfare Programmes | 4, 5 |

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Course : **B. Tech**                                    Time : **03 Hrs**

Semester: **II**        Branch : Section B and C        Max. Marks : **100**

Subject Code: SOE-B-FY208        Subject: Introduction to Artificial Intelligence

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**Note: Section A :** All Questions are compulsory.  [10 x 02 marks]
**Section B :** Answer any 8 questions.  [08 x 05 marks]
**Section C :** Answer any 5 questions [05 x 08 marks]

| Q. No. | Section [A] | CO |
|--------|-------------|----|
| Q1 a) | What is CNN. | 2 |
| Q1 b) | Define informed search | 1 |
| Q1 c) | What are the properties of queue? | 1 |
| Q1 d) | Define DFS | 2 |
| Q1 e) | What is the difference between data and information? | 2 |
| Q1 f) | Define Narrow AI | 1 |
| Q1 g) | What is data validation? | 3 |
| Q1 h) | Draw and annotate a multi-layer feed-forward neural network. | 4 |
| Q1 i) | What is the meaning of weight in neural network? | 4 |
| Q1 j) | What is confusion matrix? | 3 |

| Q. No. | Section [B] | CO |
|--------|-------------|----|
| Q2 a) | What is Naïve Bayes? Discuss in detail. | 1 |
| Q2 b) | Explain K-fold cross validation technique with the help of a neat diagram. | 3 |
| Q2 c) | Draw and explain the structure of a biological neuron in the context of ANN | 4 |
| Q2 d) | Write a short note on weather forecasting system. | 5 |
| Q2 e) | What is activation function? Discuss any two types of activation functions | 4 |
| Q2 f) | Write a note on MNIST dataset. | 3 |
| Q2 g) | What are the types of learning? i.e., supervised, unsupervised and reinforcement. | 1 |
| Q2 h) | What is a recommender system? How does it work? | 2 |
| Q2 i) | Discuss any two real life examples of AI based systems that we use in our daily life. | 2 |
| Q2 j) | Describe the components of an AI system. | 1 |

| Q. No. | Section [C] | CO |
|--------|-------------|----|
| Q3 a) | Write a detailed note on A* search technique used in AI | 1 |
| Q3 b) | Describe Breadth first search algorithm with the help of an example | 1 |
| Q3 c) | Describe Decision Tree algorithm with the help of an example | 2 |
| Q3 d) | What are the different data validation techniques? | 3 |
| Q3 e) | Discuss various applications of Deep Learning. | 5 |
| Q3 f) | Describe different architectures of Artificial Neural Network? | 4 |
| Q3 g) | Write a detailed note on smart home system. Discuss about all it's components. | 5 |

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## O P JINDAL UNIVERSITY

**Course Code: SOE-B-FY-204**

**B. Tech. II Semester Backlog Examinations**

**Basics of Civil Engineering**

(Offered to CE, ME, EE, MME)

OPJU

Time: 03 Hrs.

**Max. Marks: 100**

Answer any one question from each unit

All questions carry equal marks

### Unit-I (20 marks)

| | | | M | CO | KL |
|---|---|---|---|---|---|
| 1 | a. | Explain the "manufacturing process of bricks (clay bricks)". | 10 | 2 | 2 |
| | b. | What are the various types of cement used for construction? | 10 | 2 | 1 |
| | | **OR** | | | |
| 2 | a. | Write down properties of Reinforced Cement Concrete? Give ten examples of uses of Reinforced Cement Concrete. | 10 | 1 | 2 |
| | b. | Describe the procedure of specific gravity and water absorption test on coarse aggregates. | 10 | 1 | 2 |

### Unit-II (20 marks)

| | | | M | CO | KL |
|---|---|---|---|---|---|
| 3 | a. | Illustrate the different components of the residential buildings through a neat sketch? | 10 | 2 | 2 |
| | b. | Write short notes on any eight different components of the residential building. | 10 | 2 | 2 |
| | | **OR** | | | |
| 4 | a. | What are the smart city features? | 10 | 3 | 1 |
| | b. | Why to opt for smart building? | 10 | 3 | 1 |

### Unit-III (20 marks)

| | | | M | CO | KL |
|---|---|---|---|---|---|
| 5 | a. | What are the various fields of engineering in Transportation? Write short notes on each of them. | 10 | 2 | 1 |
| | b. | Classify roads in India based on the recommendation of IRC. Write short notes on each of them. | 10 | 2 | 2 |
| | | **OR** | | | |
| 6 | a. | Write a note on the Traffic Characteristics? | 10 | 2 | 2 |
| | b. | What is the usefulness of the Traffic flow study? | 10 | 2 | 1 |

### Unit-IV (20 marks)

| | | | M | CO | KL |
|---|---|---|---|---|---|
| 7 | a. | Write notes on various types of foundations. | 10 | 2 | 2 |
| | b. | What are different methods used for improving the bearing capacity of soil? | 10 | 2 | 1 |
| | | **OR** | | | |
| 8 | a. | Classify of pile foundation on basis of the materials and composition. | 10 | 2 | 2 |
| | b. | Classify of pile foundation on basis of their function. | 10 | 2 | 2 |

### UNIT-V (20 marks)

| | | | M | CO | KL |
|---|---|---|---|---|---|
| 9 | a. | Summarize the application of drone technology in the construction industry? | 10 | 3 | 2 |

| | b. | Why choose modular construction? Write down aims and basics of modular construction? | 10 | 3 | 1 |
|---|---|---|---|---|---|
| | | **OR** | | | |
| 10 | a. | Summarize the benefits of cloud collaboration? | 10 | 3 | 2 |
| | b. | Explain the benefits of using AR in an engineering environment? | 10 | 3 | 2 |

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