

# Important RGPV Questions

## BT-202 Mathematics-II

### UNIT 1

#### Ordinary Differential Equations I

Q.no.	Remarks	Question	Year
1		Solve : $\frac{dy}{dx} = \cos(x + y) + \sin(x + y)$ .	RGPV June 2023
2		Solve : $(1 + y^2)dx = (\tan^{-1} y - x)dy$	RGPV June 2023
3		Solve $\frac{d^2y}{dx^2} + \frac{dy}{dx} = (1 + e^x)^{-1}$	RGPV June 2023
4		Solve : $\frac{dx}{dt} - y = e^t, \frac{dy}{dt} + x = \sin t; x(0) = 1, y(0) = 0$	RGPV June 2023
5		Solve $\cos x dy = y(\sin x - y)dx$ using Bernoulli's.	RGPV June 2023
6		Solve the Linear differential equation $\sin 2x \frac{dy}{dx} - y = \tan x$	RGPV Nov 2022
7		Solve $(r + \sin\theta - \cos\theta)dr + r(\sin\theta + \cos\theta)d\theta = 0$	RGPV Nov 2022
8		Solve the differential equation . $(D^3 - 7D^2 + 14D - 8)y = e^x \cos 2x$	RGPV Nov 2022
9		Solve $(D^2 + 4)y = \tan 2x$ by using method of variation of parameters.	RGPV Nov 2022
10		Solve $(D^2 - 4DD^1 + 4D^{1^2})Z = \cos(x - 2y)$	RGPV Nov 2022
11		Solve - $(D^2 - DD^1 - 6D^{1^2})Z = xy$	RGPV June 2020
12		Solve the following differential equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = \cos 2x$	RGPV June 2020
13	V Imp	Show that the following equations are exact and solve if $ye^x dx + (2y + e^x)dy = 0$ <i>Or</i> Solve the exact differential equation $ye^x dx + (2y + e^x)dy = 0$	RGPV Nov 2019 RGPV Dec 2017
14		Solve - $x^2 p^3 + y(1 + x^2 y)p^2 + y^3 p = 0$ , where $p = \frac{dy}{dx}$	RGPV May 2019
15		Solve $(D^3 - 3D^2 + 4)y = 0$	RGPV Dec 2017

16		Solve the differential equation $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = 0$	RGPV Nov 2019 RGPV June 2020
17	V Imp	Solve the differential equations $(D + 2)(D - 1)^3y = e^x$	RGPV Nov 2019 RGPV June 2020
18		Solve - $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = e^{-x}$	RGPV Dec 2017
19		Solve - $\frac{d^2y}{dx^2} + 4y = e^{-x} + \sin 2x$	RGPV June 2017
20		Solve- $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = \log x$	RGPV May 2018
21	V Imp	Solve the simultaneous differential equations- $\frac{dx}{dt} + y = \sin t, \frac{dy}{dx} + x = \cos t$ <i>Or</i> Solve $\frac{dx}{dt} + y = \sin t, \frac{dy}{dx} + x = \cos t$	RGPV June 2017 RGPV May 2018
22		Solve $\left(1 + e^{\frac{x}{y}}\right)dx + e^{\frac{x}{y}}\left(1 - \frac{x}{y}\right)dy = 0$	RGPV June 2022
23		Solve the Linear differential equation $(1 + y^2) + (x - e^{\tan^{-1}y})\frac{dy}{dx} = 0$	RGPV June 2022

# Important RGPV Questions

## BT-202 Mathematics-II

### UNIT 2

### Ordinary differential Equations II

Q.no.	Remarks	Question	Year
1		Prove that $J_{\frac{1}{2}}(x) = \sqrt{\frac{2}{\pi x}} \sin x$	RGPV Jun 2023
2		Solve $(1 - x^2) \frac{d^2y}{dx^2} + \frac{dy}{dx} - y = x(1 - x^2)^{3/2}$	RGPV May 2019
3		Solve $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y = 0$ given that $x + \frac{1}{x}$ is one integral.	RGPV Nov 2019
4		Solve the differential equation $\frac{d^2y}{dx^2} - 2\tan x \frac{dy}{dx} - 5y = \cos 2x$ by reducing it in normal form.	RGPV May 2018
5	V Imp	Solve $\frac{d^2y}{dx^2} + 2x \frac{dy}{dx} + (x^2 + 1)y = x^3 + 3x$ by changing it in normal form.	RGPV Nov 2019 RGPV June 2017
6		Solve the differential equation $(D^2 - 6D + 9)y = \frac{e^{3x}}{x^2}$ using variation of parameter.	RGPV May 2018
7	V Imp	Solve in $(1 - x^2) \frac{d^2y}{dx^2} + 2x \frac{dy}{dx} + y = 0$ series solution.	RGPV Nov 2019 RGPV Jun 2015
8		$x \frac{d^2y}{dx^2} - (2x - 1) \frac{dy}{dx} + (x - 1)y = 0$ if $y = e^x$ in one integral.	RGPV Dec 2017
9		Solve the following differential equation $\frac{d^2y}{dx^2} - 2 \tan x \frac{dy}{dx} + 5y = \sec x \cdot e^x$	RGPV Jun 2020 CBGS
10		Solve $\frac{dy}{dx^2} - y = 0$ in series.	RGPV Jun 2020 CBGS
11		Using the method of variation of parameter solve the equation $\frac{d^2y}{dx^2} + y = \sec x$	RGPV Dec 2017

# Important RGPV Questions

## BT-202 Mathematics-II

### UNIT 3

### Partial Differential Equations

Q.no.	Remarks	Question	Year
1		Eliminate the arbitrary function $f$ from the relation $z = e^{xy}f(x - y)$ and form partial differential equation.	RGPV Nov 2019
2		Form a partial differential equation by eliminating arbitrary function from : $z = f(x^2 - y^2)$	RGPV May 2019
3	V Imp	Solve the following differential equation - $(x^2 - y^2 - z^2)p + 2xyq = 2xz$ , where $p = \frac{\partial z}{\partial x}$ , $q = \frac{\partial z}{\partial y}$	RGPV May 2019 RGPV Dec 2016
4		Solve $x^2p^2 + y^2q^2 = z^2$	RGPV Jun 2023
5		Solve $x^2p + y^2q = (x + y)z$	RGPV Dec 2017
6		Solve the equation $zp + yq = x$	RGPV May 2018
7		Use Lagrange's method, solve the equation $xzp + yzq = xy$	RGPV Dec 2017
8		Solve $x^2p^2 + y^2q^2 = z^2$	RGPV Jun 2017
9		Solve $x^2p^2 + y^2q^2 = 1$ where $p = \frac{\partial z}{\partial x}$ , $q = \frac{\partial z}{\partial y}$	RGPV May 2019
10		Solve the partial differential equation $\frac{\partial^2 y}{\partial x^2} + 4 \frac{\partial y}{\partial x \partial y} - 5 \frac{\partial^2 z}{\partial y^2} = 0$	RGPV May 2018
11		Solve $(D^2 - DD' + 2D'^2)Z = x + y$	RGPV Dec 2017
12		Solve the partial differential equation $(D^2 - DD' - 6D'^2)z = xy$	RGPV Nov 2019
13		Solve $\frac{\partial^2 z}{\partial x^2} - 2 \frac{\partial^2 z}{\partial x \partial y} + \frac{\partial^2 z}{\partial y^2} = 12xy$	RGPV Jun 2017
14		Solve the partial differential equation- $\frac{\partial^2 z}{\partial x^2} + \frac{\partial^2 z}{\partial x \partial y} - 6 \frac{\partial^2 z}{\partial y^2} = y \cos x$	RGPV Dec 2016

15		Solve $\frac{\partial^3 z}{\partial x^3} + \frac{\partial^3 z}{\partial x^2 \partial y} = 3x^2 y$	RGPV Jun 2016
16		Use Lagrange's method, solve the equation $yzp + zxq = xy$	RGPV Jun 2017
17		Solve the $(D^3 - 3D^2 D^1 + 4D^1)^3 z = e^{x+2y}$	RGPV Jun 2022
18		Form the partial differential equation by eliminating arbitrary function from $Z = f(y/x)$	RGPV Jun 2022

# Important RGPV Questions

## BT-202 Mathematics-II

### UNIT 4

#### Functions of Complex Variable

Q.no.	Remarks	Question	Year
1		Prove that an analytic function with constant modulus is constant.	RGPV June 2023
2		Use Cauchy Integral formula to solve $\oint_c \frac{\sin \pi z^2 + \cos \pi z^2}{(z-1)(z-2)} dz$ where C is the circle $ z  = 3$	RGPV Jun 2023
3		Using complex integration method, Solve : $\int_0^{2\pi} \frac{\cos 4\theta}{5+4\cos\theta} d\theta$	RGPV Jun 2023
4		Show that $f(z) = z\bar{z}$ is differentiable but not analytic at origin.	RGPV Nov 2022
5		Show that $u(x, y) = e^{-2x} \sin 2y$ is harmonic and determine it's Harmonic conjugate.	RGPV Nov 2022
6		By Residue theorem, Evaluate $\oint_c \frac{\tan z}{z^2 - 1} dz$ , where $C:  Z  = 2$	RGPV Nov 2022
7		Using Cauchy integral theorem, to evaluate the integral $\oint_c \frac{e^{2z}}{(z-1)^2(z-3)} dz$ , where C is the circle $ Z  = 2$	RGPV Nov 2022
8	V Imp	Show that the function $u = e^{-2ny} \sin(x^2 - y^2)$ is harmonic.	RGPV June 2020 RGPV Nov 2019
9		Show that the function is $u = x^3 - 3xy^2$ harmonic and find the corresponding analytic function.	RGPV June 2017
10		Evaluate the following integral using Cauchy-Integral formula $\oint_c \frac{4-3z}{z(z-1)(z-2)} dx$ , where C is the circle $ z  = 3/2$	RGPV May 2019
11		Evaluate for the circle $\int_0^{2\pi} \frac{d\theta}{2+\cos\theta}$ for the circle $ z  = 1$	RGPV May 2019
12		Show that the function $f(z) = e^z$ is analytic everywhere.	RGPV June 2020

13		Evaluate $\oint_C \frac{z}{(z^2+9)} dz$ , where C is the circle $ z - 2i  = 4$	RGPV June 2020
14		Determine whether $\frac{1}{z}$ is analytic or not.	RGPV June 2020
15		Determine the analytic function, whose real part is $e^{2x}(x\cos 2y - y\sin 2y)$ .	RGPV May 2019
16		Show that the following function is harmonic and find its harmonic conjugate functions $u = \frac{1}{2} \log(x^2 + y^2)$	RGPV May 2019
17		Construct the analytic function $f(z)$ , whose real part is $e^x \cos y$ .	RGPV June 2022
18		Using Cauchy's integral formula, find $\int_C \frac{e^{2z}}{(z+1)^3} dz$ where C is the curve $ z =2$ .	RGPV June 2022
19		Evaluate $\int_C \frac{1}{(z+4)z^8} dz$ where C is the circle $ z =2$ .	RGPV June 2022

# Important RGPV Questions

## BT-202 Mathematics-II

### UNIT 5

### Vector Calculus

Q.no.	Remarks	Question	Year
1		<p>Solve : <math>\int_0^{1+i} (x - y + ix^2) dz</math> along the real axis from <math>z = 0</math> to <math>z = 1</math> and then along a line parallel to imaginary axis from <math>z = 1</math> to <math>z = 1 + i</math>.</p>	RGPV Jun 2023
2		<p>Prove that : <math>\nabla^2 f(r) = f''(r) + \frac{2}{r} f'(r)</math></p>	RGPV Jun 2023
3		<p>Find the directional derivative of <math>f(x, y, z) = e^{2x} \cos yz</math> at <math>(0, 0, 0)</math> in the direction of the tangent to the curve <math>x = a \sin t, y = a \cos t, z = at</math> at <math>t = \frac{\pi}{4}</math></p>	RGPV Jun 2023
4		<p>Using Green's theorem, find the area of the region in the first quadrant bounded by the curve <math>y = x, y = \frac{1}{x}, y = \frac{x}{4}</math></p>	RGPV Jun 2023
5		Show that $\frac{\vec{r}}{r^3}$ is solenoidal.	RGPV Nov 2022
6		<p>Verify Green's theorem for <math>\int_C [3x^2 - 8y^2] dx + [4y - 6xy] dy</math> Where C is the region bounded by <math>x = 0, y = 0</math> and <math>x + y = 1</math></p>	RGPV Nov 2022
7		Find $\operatorname{dir}(\operatorname{curl} \vec{F})$ where $\vec{F} = x^2 y \hat{i} + nz \hat{j} + 2yz \hat{n}$	RGPV Jun 2020
8		If $\vec{F} = 3xy \hat{i} - y^2 \hat{j}$ , evaluate $\int_C \vec{F} \cdot d\vec{r}$ , where C is the arc of the parabola $y = 2x^2$ from $(0, 0)$ to $(1, 2)$ .	RGPV May 2019
9	V Imp	<p>Evaluate <math>\iint_S \vec{A} \cdot \hat{n} ds</math>, where <math>\vec{A} = (x + y^2) \hat{i} - 2x \hat{j} + 2yz \hat{k}</math> and S is the surface of plane <math>2x + y + 2z = 6</math> in the first octant.</p>	RGPV May 2019 RGPV Dec 2016
10		Find $\operatorname{div}(\operatorname{curl} \vec{F})$ where $\vec{F} = x^2 y \hat{i} + xz \hat{j} + 2yz \hat{k}$	RGPV Nov 2019

		Using Gauss's divergence theorem, find $\iint_S \vec{F} \cdot \hat{n} \, ds$ where  11 $\vec{F} = (2x + 3z)\hat{i} - (xz + y)\hat{j} + (y^2 + 2z)\hat{k}$ and S is the surface of Sphere with center $(3, -1, 2)$ and radius 3.	RGPV Nov 2019
12		Verify Gauss divergence theorem for $\vec{F} = x^2\hat{i} + y^2\hat{j} + z^2\hat{k}$ over the cube formed by the planes $x = 0, x = a, y = 0, y = b, z = 0, z = c$ .	RGPV Jun 2022
13		Find the directional derivative of $\varphi = xy + yz + zx$ in the direction of $2\hat{i} + \hat{j} + \hat{k}$ at the point $(1, 1, 2)$ . Also find the maximum value of the directional derivative at the point	RGPV Dec 2016
14		Show that the vector $\vec{F} = \frac{\vec{r}}{r^3}$ is irrotational. Find the scalar potential.	RGPV Dec 2016
15		A vector field is given by $\vec{F} = (\sin y)\hat{i} + x(1 + \cos y)\hat{j}$ Evaluate the line integral over the circular path given by $x^2 + y^2 = a^2, z = 0$	RGPV Dec 2015
16		Verify Stoke's theorem for the vector $\vec{F} = z\hat{i} + x\hat{j} + y\hat{k}$ taken over the half of the sphere $x^2 + y^2 + z^2 = a^2$ lying above the xy-plane.	RGPV Dec 2015

# Important RGPV Questions of BT-201 Engineering Physics

## UNIT 1

### Wave nature of particles and the Schrodinger equation

No.	Remark	Questions	Exam
1.	V Imp	<p>Explain the Heisenberg's uncertainty principle in detail.  <b>Or</b>            Discuss uncertainty principle and give one proof.  <b>Or</b>            State and explain Heisenberg's uncertainty principle.  <b>Or</b>            State Heisenberg's uncertainty principle and derive it for hypothetical gamma ray microscope</p>	RGPV Dec.2022  RGPV Jun 2022, 2017, 2012  RGPV May 2019,2018
2.		Deduce the relation between phase and group velocities.	RGPV Dec.2022
3.		Discuss the physical significance of wave function.	RGPV Jun 2022
4.		Deduce the energy Eigen values and wave function of a particle moving in one dimensional box.	RGPV Jun 2022
5.		Deduce expression for energy of a particle trapped in one dimensional box.	RGPV Jun 2020
6.		Establish relation between $U_g$ and $U_p$ .	RGPV Jun 2020
7.	V Imp	<p>Obtain the time independent Schrodinger wave equation.  <b>Or</b>            Derive time dependent Schrodinger wave equation.  <b>Or</b>            State time independent Schrodinger equation and obtain the wave function for a particle in one dimension potential well.</p>	RGPV Dec.2022, RGPV Jun 2022  RGPV Jun 2020 RGPV Jun 2011 RGPV May 2018
8.		Explain relation between phase and group velocities.	RGPV Jun 2020
9.		Give expression for momentum operator.	RGPV Jun 2020
10.	V Imp	Discuss the concept of de-Broglie matter waves.	RGPV Dec 2010 RGPV Jun 2015
11.		Write short notes on (a) Physical significance of wave function (b) Young's double slit experiment	RGPV Dec.2022
12.	V Imp	<p>Derive the expression for Compton shift in a Compton scattering process.  <b>Or</b>            Obtain the expression for Compton shift in wavelength of incidence radiation in Compton scattering.  <b>Or</b>            Explain Compton scattering.  <b>Or</b>            Explain Compton scattering. Find the value of wavelength of scattered photon. What Compton wavelength.</p>	RGPV Dec 2016,2017,2012 RGPV Jun 2016,2011 RGPV May 2018 RGPV Nov 2018

# Important RGPV Questions of BT-201 Engineering Physics

## UNIT 2

### Wave Optics

NO.	REMARK	QUESTIONS	EXAM
1.	V Imp	<p>Explain Newton's ring method to determine the wavelength of sodium light. IN Newton's ring shows the diameter of 4<sup>th</sup> and 12<sup>th</sup> dark rings are 400cm and 700cm. Find the diameter of 20<sup>th</sup> dark ring.</p> <p style="text-align: center;"><b>Or</b></p> <p>In Newton's rings experiment the diameter of the 4<sup>th</sup> and 12<sup>th</sup> dark rings are 0.400 cm and 0.700 cm respectively. Find the diameter of 20<sup>th</sup> dark ring in the same experiment arrangement.</p>	RGPV Dec 2020 RGPV May 2018
2.		How the Newton's rings are formed? Deduce the expression for diameter of dark and bright fringes.	RGPV Dec.2022
3.		Discuss the construction and working of Michelson interferometer.	RGPV Jun 2022
4.	V Imp	<p>Discuss Rayleigh criterion of resolution.</p> <p style="text-align: center;"><b>Or</b></p> <p>Explain Rayleigh criterion for resolving power.</p>	RGPV Nov 2018, 2007
5.		Explain Fraunhofer diffraction from a single slit.	RGPV Jun 2020
6.		Describe the construction and working of Mach-Zehnder interferometer.	RGPV Dec.2022
7.		Explain about the diffraction grating. A parallel beam of sodium light incident on plane transmission grating having 4250 lines per centimeter and a second order spectral line is observed at an angle of 30°. Find the wave length of Sodium light.	RGPV Dec.2022
8.		What is superposition of waves? Explain constructive and destructive interference.	RGPV Jun 2022
9.	V Imp	<p>Explain the formation of Newton's rings. Obtain expression to find the wavelength of light in Newton's rings experiment.</p> <p style="text-align: center;"><b>Or</b></p> <p>Explain in detail the Newton's rings experiment.</p> <p style="text-align: center;"><b>Or</b></p> <p>Write down the experimental detail of Newton's ring to find wavelength of light.</p>	RGPV Jun 2022 RGPV Jun 2020 RGPV Nov 2018 RGPV May 2018 RGPV Jun 2017
10.	V Imp	<p>Explain in detail, the working of Michelson's interferometer.</p> <p style="text-align: center;"><b>Or</b></p> <p>Explain the construction and working of Michelson's interferometer with the help of a neat diagram.</p>	RGPV Dec 2020 RGPV May 2019 RGPV Jun 2010
11.		Write a note on different types of polarizations in dielectric materials.	RGPV Jun 2022
12		Differentiate between division of amplitude and division of wave front.	RGPV Jun 2017

		<b>Or</b> Explain in brief the interference of light. Give its types.	
13	V Imp	<p>Explain the interference of light by Fresnel's biprism. <b>Or</b> Explain formation of interference fringes by means of a Fresnel's biprism when monochromatic source of light is used. <b>Or</b> Write short note on interference of light by Fresnel's biprism.</p>	RGPV May 2018 RGPV Dec 2010 RGPV Jun 2010
14	V Imp	<p>Write short note on diffraction grating. <b>Or</b> Give the theory of plane transmission grating with the help of a neat diagram. <b>Or</b> Give construction and theory of plane transmission grating. Obtain an expression for resolving power of plane transmission grating. <b>Or</b> Write short note on plane transmission grating.</p>	RGPV Nov 2018 RGPV Dec 2012 RGPV Dec 2011 RGPV Jun 2011
15	V Imp	<p>Show that the resolving power of the grating is directly proportionally to the total width of the ruled space on it. <b>Or</b> What do you understand by the resolving power of grating? Derive the necessary expression. <b>Or</b> Deduce the expression for the resolving power of the grating.</p>	RGPV Dec 2015 RGPV Jun 2017 RGPV March/April 2010

# Important RGPV Questions of BT-201 Engineering Physics

## UNIT 3

### Introduction to Solid

NO.	REMARK	QUESTIONS	EXAM
1.		Write short note any two of the following : a) Fermi level b) Hall effect c) Zener diode d) Solar cell	RGPV Dec 2020
2.		Explain the variation of Fermi level in N-type semiconductor with concentration and temperature.	RGPV Jun 2022
3.		What is P-N junction diode? Discuss its I-V characteristics.	RGPV Dec.2022
4.		Explain construction and working of solar cell with neat diagrams.	RGPV Dec.2022
5.		What is Zener diode? Discuss its I-V characteristics.	RGPV Jun 2022
6.	V Imp	Deduce an expression for Hall coefficient and Hall voltage.	RGPV Jun 2022, RGPV Dec.2022
7.		Write short notes on Bloch's theorem	RGPV Dec.2022
8.		Write short notes on solar cell.	RGPV Jun 2022
9	V Imp	Explain band theory for solids and distinguish metals, semiconductors and insulators on the basis of band theory.  Or Short note on energy band in solid.  Or Discuss the band theory of solids.	RGPV Jun 2017 RGPV Dec 2015 RGPV Jun 2009 RGPV Sept 2009
10	V Imp	Define fermi level of a semiconductor.  Or Write short note on Fermi level.	RGPV Nov 2018 RGPV Jun 2017
11	V Imp	Discuss Bloch's theorem for particles in a periodic potential.  Or Write short note on Bloch's theorem.	RGPV Nov 2018 RGPV May 2019
12	V Imp	Discuss salient features of Kronig-Penny model.  Or Discuss Kronig-Penny model.  Or Write short note on Kronig-Penney model.	RGPV Dec 2017 RGPV May 2018 RGPV Nov 2018 RGPV Dec 2012 RGPV Jun 2011
13	V Imp	What is Zener breakdown? Explain briefly.  Or What is Zener diode? Explain its working with the help of characteristic curve.  Or Write a note on Zener diode.  Or Explain the V-I characteristics of Zener diode.	RGPV Dec 2015 RGPV Dec 2017 RGPV Dec 2014 RGPV Jun 2009
14	V Imp	Explain constructional working, with the help of I-V characteristic for the solar cell semiconductor device.  Or Write short note on solar cells.  Or Discuss the basic operation and characteristics of a solar cell with necessary diagram.	RGPV Nov 2018 RGPV Dec 2013 RGPV Jun 2009, 2010
15	V Imp	Explain Hall effect. Obtain the expression for Hall coefficient.  Or Write short on Hall effect.  Or Explain Hall effect.	RGPV Dec 2015,2016,2017 RGPV May 2018 RGPV May 2019

# Important RGPV Questions of BT-201 Engineering Physics

## UNIT 4

### Lasers

NO.	REMARK	QUESTIONS	EXAM
1.	V Imp	<p>Derive the relationship between Einstein's A and B coefficients. Or Establish the relationship between Einstein's coefficient A and B. Or Obtain relation between the transition probabilities of Einstein's A and B coefficients.</p>	RGPV Dec.2022 RGPV Dec.2013 RGPV Jun 2010
2.	V Imp	<p>Explain working of He-Ne laser. Or Describe the working principle and construction of any one laser. Or Explain the construction and working of a He-Ne laser with energy level diagram. Or Explain with the help of a neat diagram the principle and working of a He-Ne laser.</p>	RGPV Jun 2020, RGPV Dec 2020, Dec.2022 RGPV May 2019 RGPV Nov 2018 RGPV May 2018
3	V Imp	<p>Explain working of a Ruby laser. Or Describe the working of Ruby LASER with energy level diagram. Or Explain construction and working of a Ruby LASER. Or Explain the construction and working of any one laser with the necessary diagram.</p>	RGPV Jun 2022 RGPV Dec 2017 RGPV Dec 2016 RGPV Dec 2014 RGPV Jun 2017 RGPV Jun 2010 RGPV Jun 2012
4	V Imp	<p>Explain the propagation of light in an optical fibre. What is maximum angle of acceptance and acceptance cone? Or Write short note on principle of optical fibre and acceptance angle.</p>	RGPV Jun 2013 RGPV Nov 2018
5	V Imp	<p>Derive the expression for numerical aperture of a step index optical fibre. Or Define numerical aperture in optical fibre. Or Derive expression for numerical aperture of an optical fibre.</p>	RGPV May 2019 RGPV No. 2018 RGPV Dec 2017 RGPV Jun 2017
6.	V Imp	Write a note on V-number.	RGPV Jun 2020 RGPV Jun 2022
7.	V Imp	<p>Write down the role of each block used in optical fibre communication system. Or Describe schematically the basic element of optical fibre communication system.</p>	RGPV Dec 2015 RGPV Jun 2017
8.		Find Curl of following. $f = 3xi - 2yzk + 4x^2yzj$	RGPV Jun 2020
9.		Explain the numerical aperture of an optical fiber. Calculate the numerical aperture of a fiber with refractive indices of core and cladding are 1.55 and 1.50, respectively.	RGPV Dec.2022
10.	V Imp	<p>Discuss the properties of Laser light. Or</p>	RGPV Dec 2022 RGPV Jun 2022

Write short note on properties of laser light.

Or

Explain major properties of a laser light.

Or

Explain basic properties of laser light.

RGPV May 2019

RGPV Nov 2018

RGPV Jun 2017

RGPV Jun 2016

11

Deduce the expression for acceptance angle of an optical fiber. Find the acceptance angle of a fiber having core and cladding refractive indices are 1.55 and 1.50, respectively.

RGPV Jun 2022

12

V Imp

Explain Maxwell's equations in vacuum.

RGPV Dec 2020

RGPV Dec 2022

13.

Derive expression for numerical aperture of a step index fiber.

RGPV Dec 2020

14.

Write some major applications of laser.

RGPV Dec 2020

15.

V Imp

Differentiate between spontaneous and stimulated emission.

Or

Define spontaneous and stimulated emission of light

RGPV May 2018

RGPV Dec 2012

# Important RGPV Questions of BT-201 Engineering Physics

## UNIT 5

### Electrostatics in vacuum

NO.	REMARK	QUESTIONS	EXAM
1.		Find gradient of following: $4x^2 - 3xy - 8z^2y$	RGPV Jun 2020
2.	V Imp	Derive Gauss Divergence theorem. Or State and prove the divergence theorem. Discuss its uses. Or State and prove the Gauss's divergence theorem.	RGPV Dec 2020 RGPV Jun 2007 RGPV Jun 2017
3.	V Imp	Explain Gauss law in point form. Or State and explain the Gauss's law. Or Write short note on Gauss theorem.	RGPV May 2019 RGPV Jun 2008 RGPV Jun 2005
4.		Find the value of Curl. $F = 2x\hat{i} + (5y - 9z)\hat{j} - 9yk$	RGPV Dec 2020
5.		Derive equation of continuity.	RGPV Jun 2020
6.	V Imp	State and explain Stoke's and Gauss theorem.	RGPV Dec.2022, Dec.2020,Jun2020
7.	V Imp	Explain Maxwell's equations in vacuum.	RGPV Dec 2020, RGPV Jun 2020 RGPV Nov 2018
8.	V Imp	Explain /Discuss Maxell's equation in integral and differential forms.	RGPV Dec 2016 RGPV Jun 2016
9.	V Imp	Discuss about the continuity equation.	RGPV Jun 2022 RGPV Nov 2018
10.	V Imp	Explain Poynting theorem.	RGPV Dec 2020 RGPV Dec 2009
11.		Write short note on Coulomb's law.	RGPV Dec 2016
12.		Explain displacement current.	RGPV Dec 2009
13.	V Imp	State and prove Stoke's theorem.	RGPV Dec 2002, 2003, 2004, 2015
14.		Find gradient of following : $4x^2 - 3xy - 8z^2y$	RGPV Nov 2018

**Important RGPV Questions**  
**BT-203 Basic Mechanical Engineering**

**UNIT I**  
**Materials**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1.		Explain the methods to measure the hardness of materials.	RGPV Dec.2022
2.		Classify engineering materials. What do you mean by alloys? Write some applications of alloys.	RGPV Dec.2022
3.		A rod 200 cm long and of diameter 3.0 cm is subjected to an axial pull of 30kN. If the Young's modulus of the material of the rod is $2 \times 10^5$ N/mm <sup>2</sup> , determine i) Stress ii) Strain iii) Elongation of the rod	RGPV Dec.2022
4.		Enlist important mechanical properties of engineering materials. Define any three with suitable examples.  Or Explain the various mechanical properties of material.	RGPV Jun 2022
5.		Explain the experimental set up of tensile testing of steel. Also compare stress-strain diagrams of ductile and brittle materials.	RGPV Jun 2022
6.	V Imp	Find the young's modulus of a brass rod of diameter 25 mm and length 250 mm which is subjected to a tensile load of 50kN when the extension of the is equal to 0.3 mm.	RGPV Jun 2022 RGPV Dec 2016 RGPV Dec 2017
7.	V Imp	Define following mechanical properties i) Tensile strength ii) Hardness iii) Ductility iv) Toughness	RGPV Jun 2020 RGPV May 2018 RGPV May 2019
8.		What is composition of Carbon steel? Give its applications.	RGPV Jun 2020
9.	V Imp	What is steel? Discuss some of the different types of steel with their applications. Give its application.	RGPV Dec 2020 RGPV May 2019 RGPV Jun 2015
10.	V Imp	What is hardness? How to measure the hardness of a material? Discuss in brief.  Or Define hardness and explain the Brinell hardness test.  Or Define hardness. Explain testing method in brief  Or Define hardness and explain the testing procedure for determining hardness of engineering material.	RGPV Dec 2020 RGPV Dec 2017 RGPV May 2018 RGPV Nov 2019 RGPV Nov 2018 RGPV Jun 2016 RGPV Dec 2014
11.	V Imp	Discuss basic classification of Engineering materials.  Or Give a brief classification of engineering materials.  Or Give the broad classification of engineering materials.	RGPV Jun 2020 RGPV Nov 2019 RGPV Nov 2018 RGPV Dec 2016
12.		Explain the iron carbon diagram in brief.	RGPV Dec 2020
13.		Write short notes on Sine bar.	RGPV Jun 2020
14.		Compare properties of ferrous and non-ferrous metals.	RGPV Dec 2015
15.		What is cast iron?	RGPV Dec 2016
16.		Give the composition, properties and uses of wrought iron.	RGPV Jun 2010
17.	V Imp	Explain the steel and iron-carbon diagram.	RGPV Jun 2016

		<p style="text-align: center;"><b>Or</b></p> <p>Explain the iron-carbon diagram.</p> <p style="text-align: center;"><b>Or</b></p> <p>Draw and iron-carbon diagram for steel.</p> <p style="text-align: center;"><b>Or</b></p> <p>Sketch the iron-carbon equilibrium diagram and point out its salient feature.</p>	RGPV Dec 2014 RGPV Nov 2018 RGPV Dec 2015
18.		<p>State and explain Hooke's law and modulus of elasticity.</p> <p style="text-align: center;"><b>Or</b></p> <p>Explain the Hooke's law.</p>	RGPV Jun 2015 RGPV Dec 2016
19.	V Imp	<p>Draw and explain the stress-strain diagram for ductile material.</p> <p style="text-align: center;"><b>Or</b></p> <p>Explain the stress-strain diagram for mild steel.</p> <p style="text-align: center;"><b>Or</b></p> <p>Discuss the stress-strain curve for a ductile material.</p> <p style="text-align: center;"><b>Or</b></p> <p>Write short note on- Stress-strain diagram of ductile material.</p>	RGPV Nov 2018 RGPV Dec 2017 RGPV Dec 2012 RGPV Jun 2012
20.		What is modulus of elasticity? Give its unit of measurement.	RGPV Dec 2014
21.	V Imp	What is alloy steel? Name two types of allow steel giving the composition and uses.	RGPV Jun 2014 RGPV Nov 2018

**Important RGPV Questions**  
**BT-203 Basic Mechanical Engineering**

**UNIT II**  
**Measurement & Production Engineering**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		Explain the working of a manometer for pressure measurement. Also relate absolute pressure, gauge pressure and vacuum pressure.	RGPV Dec.2022
2	V Imp	What are dial gauges? State its applications. <b>Or</b> Describe the construction and use of dial gauge.	RGPV Jun 2016 RGPV Dec 2015
3		Write short note on slip gauge.	RGPV Jun 2013
4	V Imp	Write down the principle of temperature measurement. <b>Or</b> Explain the principle of temperature measurement.	RGPV Jun 2015 RGPV Jun 2014
5		What are various methods of measuring temperature? Explain any one.	RGPV Jun 2020
6	V Imp	Explain the working of Micrometer. <b>Or</b> With the help of neat sketch explain the working of micrometer. <b>Or</b> What is the use of micrometer? Explain it working.	RGPV Jun 2020 RGPV Nov 2018
7	V Imp	What is the principle of working of RTD. Explain.	RGPV Jun 2020 RGPV May 2019
8	V Imp	Briefly describe the concept of measurement errors. What are the various sources of measuring errors? <b>Or</b> Discuss the different sources of errors in the act of taking measurement.	RGPV Jun 2016 RGPV Jun 2015 RGPV Dec 2012
9		What is error? Discuss the various types of errors during measurement.	RGPV Dec 2020
10		What is dynamometer? Explain the different types of dynamometers.	RGPV Dec 2020
11		Briefly explain the devices used for measuring the pressure of a fluid.	RGPV Jun 2014
12	V Imp	What is a sine bar? Give its working principle. <b>Or</b> Write short note on – Sine bar.	RGPV Nov 2018 RGPV Jun 2020
13		What is the use of sine bar? State the process to measure any angle using sine bar with neat sketch.	RGPV Jun 2011
14		Explain how sine bar used for setting an angle and for finding an unknown angle.	RGPV Dec 2015
15	V Imp	Explain the measurement process using Vernier caliper with neat sketch. <b>Or</b> Discuss the method of measurement of Vernier Caliper.	RGPV Dec.2022 RGPV Jun 2020 RGPV Jun 2014
16		What are the various methods used for temperature measurement? Explain any one of them.	RGPV Jun 2022
17	V Imp	Explain the process of velocity measurement of fluid. <b>Or</b>	RGPV May 2018 RGPV Nov 2019

		Explain a process of velocity measurement of a fluid.	
18		How will you measure flow? Name instruments used.	RGPV Jun 2016
19	V Imp	<p>What is venturimeter? Derive the expression for measuring rate of flow of fluid in a horizontal pipe.</p> <p style="text-align: center;"><b>Or</b></p> <p>Explain the principle of venturimeter with a neat sketch and derive the expression for the rate flow of fluid through it.</p> <p style="text-align: center;"><b>Or</b></p> <p>Describe the measurement of flow rate of a fluid flowing through a circular pipe.</p>	RGPV Dec 2014 RGPV Jun 2014 RGPV Jun 2012
20		What is torque? What are the methods of measuring the torque?	
21	V Imp	<p>With a neat diagram explain the main parts of a lathe machine. Explain any two operations performed on a lathe machine.</p> <p style="text-align: center;"><b>Or</b></p> <p>Draw a neat sketch of lathe machine showing essential components. State functions of three major components.</p> <p style="text-align: center;"><b>Or</b></p> <p>What are different parts of a lathe machine? Give their function also.</p>	RGPV Dec.2022 RGPV Nov 2018 RGPV Jun 2016
22	V Imp	With a neat diagram explain the main parts of a drilling machine. Explain any two operations performed on a drilling machine.	RGPV Jun 2022 RGPV Nov 2011
23		Explain the working of a vertical drilling machine with the help of a neat sketch. Also state the parameters used to specify a drilling machine.	RGPV Dec 2011
24	V Imp	<p>What is Casting? List its advantages.</p> <p style="text-align: center;"><b>Or</b></p> <p>What is casting? What are its advantages?</p>	RGPV Jun 2020 RGPV May 2018
25		Define welding. Classify welding processes. Explain arc welding process.	RGPV Jun 2022
26		Explain the different types of welding with their applications.	RGPV Dec 2020
27		Write short notes on Casting	RGPV Jun 2022
28		Write short notes on the Lathe operations	RGPV Dec 2020
29		Write short notes on Welding defects	RGPV Dec 2022

**Important RGPV Questions**  
**BT-203 Basic Mechanical Engineering**

**UNIT III**  
**Fluids**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1.		Explain the working of a reciprocating pump with the suitable diagram.	RGPV Dec 2020
2.		What is the reciprocating pump? Explain its working with a neat sketch.	RGPV Jun 2022
3.		A flat plate of area $1.5 \times 10^6 \text{ mm}^2$ is pulled with a speed of 0.4 m/s relative to another plate located at a distance of 0.15 mm from it. Find the force and power required to maintain this speed, if the fluid separating them is having viscosity as 1 poise. [ 1 poise = 0.1 N s/m <sup>2</sup> ]	RGPV Dec.2022
4.		A plate, 0.025mm distant from a fixed plate, moves at 60 cm/s and requires a force of 2 N/unit area i.e. 2 N/m <sup>2</sup> to maintain this speed. Determine the fluid viscosity between the plates.	RGPV Jun 2022
5.		Define viscosity. What is the importance of viscosity while selecting fluids in various engineering applications?	RGPV Dec.2022
6.	V Imp	<p>What is Newton's law of viscosity? Explain its significance.  <b>Or</b>          State the Newton's law of viscosity and give examples of its application.</p> <p><b>Or</b>          Write the Newton's law of viscosity.  <b>Or</b>          State Newton's law of viscosity.</p>	RGPV Nov 2018 RGPV Jun 2014 RGPV Dec 2016 RGPV Dec 2015 RGPV Jun 2015
7.		Explain working principle of hydraulic turbines (Pelton wheel) with neat sketch.	RGPV Dec.2022
8.		<p>What is fluid? Discuss the various types of fluids.  <b>Or</b>          What do you mean by fluid? Define any three properties of fluid.</p>	RGPV Dec 2020 RGPV June 2016
9.	V Imp	<p>State Pascal's law. Derive Bernoulli's equation. What are the assumptions made in Bernoulli's equation?  <b>Or</b>          State Bernoulli's equation for incompressible fluids.</p>	RGPV Jun 2022 RGPV Jun 2016
10	V Imp	<p>Derive Bernoulli's equation for a perfect incompressible liquid.  <b>Or</b>          Write short note on – Derivation of Bernoulli's theorem.</p>	RGPV Jun 2015 RGPV May 2019
11.		Write short notes on Different types of fluids.	RGPV Jun 2022
12.		What is difference between the dynamic viscosity and kinematic viscosity?	RGPV Dec 2017
13.		Differentiate between laminar and turbulent flow.	RGPV May 2018
14.		Calculate specific weight, density, specific volume and specific gravity of petrol, if one litre of petrol weights 6.867 N.	RGPV Jun 2014
15.		What do you understand by the term kinetic energy?	RGPV Dec 2016
16.		<p>Explain with suitable diagram the working principle of fluid coupling.  <b>Or</b>          Explain with suitable diagram working of a fluid coupling.  <b>Or</b></p>	RGPV Nov 2018 RGPV Dec 2016 RGPV Jun 2016 RGPV Jun 2015

		<p>Describe the working principle of fluid coupling with neat sketch.</p> <p><b>Or</b></p> <p>Explain construction and working of fluid coupling.</p>	
17.	V Imp	How hydraulic pumps are classified? Explain.	RGPV Jun 2008 RGPV Jun 2013
18.		Discuss types of water turbine.	RGPV Jun 2016
19.		Distinguish between inward and outward flow reaction turbine.	RGPV Dec 2015
20.	V Imp	<p>Explain the working of Pelton turbine.</p> <p><b>Or</b></p> <p>Describe the construction and working of any one hydraulic turbine.</p> <p><b>Or</b></p> <p>Describe the working of Pelton turbine.</p>	RGPV May 2019 RGPV Jun 2011 RGPV Nov 2019
21.		Explain the working principle of water turbine.	RGPV Nov 2018
22.		Define pump, compressor, turbine, positive displacement machine and pneumatic machine.	RGPV Dec 2013
23.		Write short note on Reciprocating pump.	RGPV Dec 2017
24.		Differentiate compressor with a pump.	RGPV Dec 2016

**Important RGPV Questions**  
**BT-203 Basic Mechanical Engineering**

**UNIT IV**

**Thermodynamics & Steam Engineering**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1	V Imp	<p>Define the thermodynamic system. Differentiate between open system, closed system and an isolated system.</p> <p style="text-align: center;">Or</p> <p>Define thermodynamic system and explain open, close and isolated systems.</p>	RGPV Dec 2017 RGPV Jun 2022
2	V Imp	<p>State and explain the Zeroth law of thermodynamics.</p> <p style="text-align: center;">Or</p> <p>What is Zeroth law of thermodynamics?</p> <p style="text-align: center;">Or</p> <p>State Zeroth law of thermodynamics.</p>	RGPV May 2018 RGPV Nov 2019 RGPV Jun 2020
3		Discuss the concept of thermal equilibrium and state zeroth law of thermodynamics.	RGPV May 2019
4	V Imp	<p>Explain the Kelvin Plank and Clausius statement of thermodynamics.</p> <p style="text-align: center;">Or</p> <p>State and explain second law of thermodynamics.</p> <p style="text-align: center;">Or</p> <p>What is second law of thermodynamics? Explain the two statements of this law.</p>	RGPV Dec 2020, 2017, 2011 RGPV Jun 2008,2013,2014
5		<p>Determine the work of compression for 1 kg of air when it is compressed from a volume of <math>0.15 \text{ m}^3</math> at a pressure of 1 bar to a volume of <math>0.05 \text{ m}^3</math> at a pressure of 1 bar to a volume of <math>0.05 \text{ m}^3</math>, when compression is –</p> <p>(i) Isothermally    (ii) Adiabatically</p>	RGPV May 2019
6		<p>During a trial operation of a boiler 1630 kg of coal were consumed in 24 hrs. and 13000 kg of water evaporated. The mean steam pressure was <math>7 \text{ kgf/cm}^2</math> and condition dry saturated. The fuel contained 3 percent moisture and 4 percent ash and had a calorific value of 7200 kcal/kg. The feed water temperature was <math>35^\circ\text{C}</math>. Determine</p> <ul style="list-style-type: none"> <li>i) The boiler efficiency</li> <li>ii) The equivalent evaporation per kg of dry coal</li> <li>iii) The equivalent evaporation per kg of combustibles.</li> </ul>	RGPV Dec.2022
7		<p>In a boiler test the following quantities were obtained ; mean temperature of the feed <math>20^\circ\text{C}</math>; mean boiler pressure <math>10 \text{ kgf/cm}^2</math>, mean steam dryness 0.9, coal burnt/hr 250 kg, water supplied to boiler per hour 2260 kg. The mass of water in the boiler at the end of the test was less than that at the commencement by 240 kg.</p> <p>Calculate:</p> <ul style="list-style-type: none"> <li>i) The actual evaporation per kg of coal and</li> <li>ii) The equivalent evaporation.</li> </ul> <p>[ Take data as :- at <math>10 \text{ kgf/cm}^2</math>, <math>H_f = 181.3 \text{ kcal/kg}</math>; <math>h_{fg} + 482 \text{ kcal/kg}</math> ]</p>	RGPV Jun 2022
8		The water is flowing through a pipe having diameter 20 cm and 10 cm at section 1 and 2 respectively. The rate of flow through pipe is	RGPV Dec 2020

		35 liters/s. The section 1 is 6m above the datum and section 2 is 4m above the datum. If the pressure at the section 1 is $39.34 \text{ N/cm}^2$ . Find intensity of pressure at section 2.	
9		Discuss briefly the differences between externally fired and internally fired steam generators. Also discuss the application of each type of steam generators.	RGPV Dec.2022
10	V Imp	<p>Discuss the difference between the boiler mountings and accessories. Explain the working of economizer in brief.</p> <p>Or</p> <p>What is the difference between the boiler mountings and accessories?</p> <p>Or</p> <p>Differentiate between the boiler mounting and accessory.</p>	RGPV Dec 2020 RGPV Dec 2017 RGPV Dec 2011
11	V Imp	Write short note boiler mountings.	RGPV May 2019 RGPV Nov 2019 RGPV Dec 2014
12	V Imp	Write short note boiler accessories.	RGPV Nov 2018 RGPV Jun 2020
13	V Imp	What are requirements of a good boiler?	RGPV Jun 2020 RGPV Nov 2019
14	V Imp	<p>Discuss, how the steam generators are classified. Give example of each classification.</p> <p>Or</p> <p>Give classification of boilers on different basis.</p> <p>Or</p> <p>Discuss four types of boiler classification.</p> <p>Or</p> <p>State the classification of boilers.</p>	RGPV Jun 2022 RGPV May 2019 RGPV Jun 2016 RGPV Dec 2012
15		What is the difference between fire tube and water tube boiler? Give example of each.	RGPV Dec 2016
16		Explain the working of a water tube boiler with the help of neat sketch.	RGPV Jun 2012
17	V Imp	<p>What is draught? What are the various types of draughts?</p> <p>Or</p> <p>Write short notes on Boiler draught.</p> <p>Or</p> <p>What is draught? Write various types.</p>	RGPV Dec 2020 RGPV Jun 2020 RGPV Nov 2018 RGPV Dec 2016
18	V Imp	Differentiate between natural and artificial draughts.	RGPV Nov 2019 RGPV May 2019 RGPV Feb 2010
19		Write short notes on the Boiler efficiency	RGPV Dec 2020
20		<p>Equivalent evaporation from and at <math>100^\circ\text{C}</math>. Explain the meaning of the term and give the reason for its use in the context of boiler performance.</p> <p>Or</p> <p>What is equivalent evaporation?</p>	RGPV Dec 2015 RGPV Jun 2015
21		What is dryness fraction?	RGPV Dec 2016
22		What is latent heat of vaporization?	RGPV Dec 2016
23		What is internal energy?	RGPV Dec 2014
24		Show the various processes of steam in a T-s diagram.	RGPV Jun 2014
25		Find the temperature, enthalpy, entropy and internal energy of 1 kg	RGPV May 2018

		of dry saturated steam at 10 bar.	
26		At 1.2 MPa, 250°C steam enters into a turbine and expands to 30°C. Determine the work output of turbine for 10 kg/s of flow rate.	RGPV Dec 2014
27		Write short notes on Thermodynamic properties	RGPV Dec.2022
28	V Imp	State Zeroth Law of thermodynamics. How is mercury in thermometer able to find the temperature of a body using the Zeroth Law of thermodynamics?	RGPV Dec 2022 RGPV Jun 2020

**Important RGPV Questions**  
**BT-203 Basic Mechanical Engineering**

**UNIT V**

**Reciprocating Machines**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		State the function of steam engine. State its applications. Also give its classification.	RGPV Jun 2016 RGPV Dec 2011
2	V Imp	Compare Otto and Diesel cycles.  <b>Or</b> Explain the fundamental difference between Otto and Diesel cycle.	RGPV Jun 2016 RGPV Dec 2014
3		Why cooling of an I.C. Engine is required?	RGPV Jun 2015
4	V Imp	Derive an expression for efficiency of Carnot cycle with neat sketches of PV and TS diagrams.  <b>Or</b> Draw the p-v diagram of Carnot cycle and express its efficiency.	RGPV Jun 2022 RGPV Dec 2014
5		Explain the Carnot cycle with suitable PV and TS diagrams.	RGPV Dec 2020
6	V Imp	Explain the working of four stroke diesel engine with suitable PV diagram.  <b>Or</b> With the help of p-v diagram, explain the working of a four stroke diesel engine.  <b>Or</b> Write short note on working of 4-stroke diesel engine.	RGPV Dec 2020 RGPV Dec 2016 RGPV Dec 2014 RGPV Nov 2018 RGPV Jun 2020
7		What is cut-off ratio? How does it affect the air standard efficiency of an Otto cycle?	RGPV Dec 2015
8		Explain the following related to steam engine- (i) Hypothetical indicator diagram (ii) Actual indicator diagram	RGPV Jun 2016
9	V Imp	Derive an expression for efficiency of Otto cycle with neat sketches of PV and TS diagrams.  <b>Or</b> Derive the expression for thermal efficiency of Otto cycle. Calculate the value for a compression ratio of 8.	RGPV Dec.2022 RGPV Nov 2019 RGPV Jun 2020
10		Differentiate between two stroke and four stroke I.C. Engine.	RGPV Dec 2014 RGPV Dec 2011
11	V Imp	Differentiate between the spark and compression ignition engines.  <b>Or</b> Differentiate between S.I. and C.I. engine.  <b>Or</b> Differentiate between petrol and diesel engines.	RGPV Dec 2017 RGPV Dec 2012 RGPV Jun 2010 RGPV Jun 2012
12		How is the mean effective pressure for reciprocating engine defined?	RGPV Dec 2015
13	V Imp	Explain the working of four stroke diesel engine with neat sketch.  <b>Or</b> Write short notes on Working of 4-stroke diesel engine	RGPV Dec.2022 RGPV Dec 2020
14	V Imp	Explain the working of two stroke petrol engine with neat sketch.  <b>Or</b> Write short note on working of 2-stroke engine.	RGPV Jun 2022 RGPV Nov 2019 RGPV Jun 2011
15	V Imp	Explain the working principle of steam engine.	RGPV May 2018

		<p style="text-align: center;"><b>Or</b></p> <p>Explain the working of a double acting steam engine with the help of a neat diagram.</p>	RGPV Jun 2012 RGPV Feb 2010
16		<p>Name the different parts of a steam engine.</p> <p style="text-align: center;"><b>Or</b></p> <p>Give list of parts of double acting steam engine.</p> <p style="text-align: center;"><b>Or</b></p> <p>Discuss the functions of each part of steam engine.</p>	RGPV Dec 2016 RGPV Jun 2015 RGPV Jun 2011
17		Define volumetric efficiency of an engine.	RGPV Dec 2016
18		What is clearance volume?	RGPV Dec 2016
19	V Imp	<p>Write short notes on the Compressor</p> <p style="text-align: center;"><b>Or</b></p> <p>State the function of a compressor. State its various types. Discuss the working of any one type.</p>	RGPV Dec 2020 RGPV Jun 2011

**Important RGPV Questions**  
**BT-204 Basic Civil Engineering & Engineering Mechanics**

**UNIT 1**  
**BUILDING MATERIALS & CONSTRUCTION**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1	V imp	<p>What do you understand by building material? Give examples.</p> <p style="text-align: center;">Or</p> <p>Briefly define building materials used in construction work.</p>	RGPV Dec 2015 RGPV Nov 2019
2	V imp	<p>Describe briefly the characteristics of good bricks.</p> <p style="text-align: center;">Or</p> <p>What are the good qualities of first class bricks?</p> <p style="text-align: center;">Or</p> <p>Define and explain various engineering properties of good bricks.</p>	RGPV Jun 2015 RGPV Dec 2017 RGPV Jun 2007
3	V imp	<p>What are the various field tests applied on bricks to judge the quality of bricks?</p> <p style="text-align: center;">Or</p> <p>Describe briefly the tests to which bricks may be put before using them for engineering purpose.</p> <p style="text-align: center;">Or</p> <p>How will you judge a good brick</p> <p style="text-align: center;">Or</p> <p>What are the various field tests carried out for bricks.</p>	RGPV Dec 2012,2013,2014 RGPV Jun 2014
4	V imp	<p>Define elements of building construction.</p> <p style="text-align: center;">Or</p> <p>Write short note on elements of building construction.</p>	RGPV Jun 2016 RGPV May 2017 RGPV Jun 2020 CBGS
5	V imp	What do you understand by energy efficiency in building?	RGPV Jun 2008 RGPV Dec 2008 RGPV Jun 2009
6		Write about physical and chemical properties of concrete.	RGPV Dec 2022
7		Explain about the different types of staircase used in building construction with a neat sketch.	RGPV Dec 2022
8	V imp	<p>Define workability of the concrete and discuss the factors that affect the workability of the concrete.</p> <p style="text-align: center;">Or</p> <p>Define the term workability. Discuss various factors which affect workability of concrete.</p> <p style="text-align: center;">Or</p> <p>What do you mean by workability of the concrete? Explain about the various factors affecting it.</p>	RGPV June 2022 RGPV Jun 2013 RGPV Jun 2014 RGPV Nov 2019
9		Explain about the different types of footing and types of brick bond used in construction.	RGPV June 2022
10	V imp	Explain various types of foundation.	RGPV Jun 2006 RGPV Feb 2010 RGPV Dec 2016
11		What is the composition of cement? Briefly define.	RGPV May 2018
12	V imp	Explain the different types of cement.	RGPV Dec 2016

			RGPV Dec 2008 RGPV Dec 2005
13		What are various properties of Cement? Explain in with salient points.	RGPV Jun 2020 CBGS
14	V imp	Briefly define nominal proportion of concrete.  Or Write short note on – Nominal concrete.	RGPV Nov 2019 RGPV May 2018 RGPV Dec 2010
15	V imp	Mention and describe the various steps involved in production of concrete.	RGPV Dec 2011 RGPV Jun 2007
16	V imp	What is the mean of curing? Also state the principle behind the curing.  Or Define curing.  Or What do you mean by curing of concrete? What are the various methods of curing?	RGPV Jun 2016 RGPV Dec 2015 RGPV Dec 2016 RGPV Feb 2010 RGPV Jun 2008 RGPV Dec 2006 RGPV Jun 2022 RGPV Dec 2022
17		Define cement concrete and mention its property.	RGPV Jun 2015
18	V imp	How the quality of cement can be accessed? Explain in brief regarding the laboratory and filed tests performed on the cement.  Or List out various field tests and laboratory tests of cement. Explain discuss any two tests in detail.  Or What are various tests of cement? Explain any two in details.	RGPV May 2018 RGPV Nov 2018 RGPV Dec 2017 RGPV Jun 2012
19		What is white cement? How is it manufactured?	RGPV Dec 2014
20	V imp	Define : Plastering and Pointing  Or Write short note on – (i) Plastering (ii) Pointing  Or Discuss plastering and pointing in civil engineering construction works.  Or Briefly define plastering and pointing.	RGPV Jun 2020 CBGS RGPV Jun 2016 RGPV Dec 2016 RGPV Nov 2018 RGPV Nov 2019
21		Narrate about the classification of stone used in construction industry.	RGPV Dec 2022
22		Discuss about the any two-laboratory test conducted on the concrete.	RGPV June 2022
23	V imp	How workability of concrete can be increased?  Or What do you understand by the term workability? Explain  Or Write short note on- Workability of concrete.	RGPV Jun 2020 RGPV Nov 2018 RGPV Dec 2014 RGPV June 2016 RGPV Jun 2022
24		What are various types of Doors and Windows? Explain with neat sketches.	RGPV Jun 2020
25		Briefly define types of staircase.	RGPV Nov 2019
26		Write short notes on the following : (Any two) a) Raft or mat foundation b) Marble flooring c) Purpose of dams	RGPV June 2022 CBGS

		d) Linoleum flooring	
27	V imp	Write short notes on Shallow and deep	RGPV Dec 2022 RGPV June 2022 RGPV Jun 2020 RGPV Nov 2018
28	V imp	Write short notes on Roofs	RGPV Dec 2022 RGPV June 2022
29	V imp	What do you understand by brick bonds? What are the different types of bonds used in brick masonry?	RGPV Feb 2007 RGPV Dec 2007 RGPV Dec 2008 RGPV Jun 2014

**Important RGPV Questions**  
**BT-204 Basic Civil Engineering & Engineering Mechanics**

**UNIT 2**  
**Surveying & Positioning**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		What do you understand by the term levelling? Also give name of various instruments used in levelling.	RGPV Nov 2018
2	V imp	Explain the individual component of the Theodolite with a sketch. <b>Or</b> What do you mean by the term theodolite? <b>Or</b> What are the main function of a theodolite	RGPV Dec 2022 RGPV Jun 2015 RGPV Nov 2018
3	V imp	Explain different types of theodolite. <b>Or</b> What do you mean by transit and non-transit theodolite?	RGPV Dec 2016 RGPV Jun 2014
4		What are the various steps on temporary adjustment of theodolite?	RGPV Jun 2016
5		What do you understand by plane table surveying?	RGPV Jun 2016
6		What are the advantages and disadvantages of plane table surveying?	RGPV Dec 2014
7	V imp	State various methods of plane table surveying. Explain any one method in detail. <b>Or</b> What are the various methods of plane table survey? Explain intersection method with the help of neat sketch. <b>Or</b> What are the various methods of plane table surveying? Explain any two in detail.	RGPV Dec 2012 RGPV Dec 2013 RGPV Feb 2010 RGPV Jun 2013 RGPV Jun 2008
8		Explain about the description of the Dumpy level with a neat sketch.	RGPV June 2022
9		Explain in brief with about the Remote sensing and its application in construction.	RGPV Dec 2022
10		Explain in brief with about the different type of levelling operation (Profile, Cross-sectional, Differential and Fly levelling) used in survey of the field.	RGPV June 2022
11		The following are the consecutive reading were taken with a level and a 4-meter levelling staff on continuously sloping ground at a common interval of 30m. 0.855(A), 1.545, 2.335, 3.115, 3.825, 0.455, 1.380, 2.055, 2.855, 3.455, 0.585, 1.015, 1.850, 2.755, and 3.84 (B). The R.L. of the first reading at A was 380.500. Make entries in level book and apply the usual check. Determine the gradient of AB. The instrument is shifted after 5 <sup>th</sup> and 10 <sup>th</sup> reading.	RGPV June 2022
12	V imp	List out various instruments used in surveying. <b>Or</b> List out of various surveying instruments. Also show their	RGPV Jun 2020 CBGS RGPV Dec 2015

		application.	
13		Illustrate the difference between the Height of Collimation and Rise and Fall Method.	RGPV Dec 2022
14		The following are the consecutive reading were taken with a levelling instrument at intervals of 20m. 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630 m. The instrument was shifted after the fourth and eight reading. The last reading was taken on a BM of RL 11.200 m. Find the RLs of all the point using Rise and Fall method and satisfy the answer with arithmetic Check.	RGPV Dec 2022
15		The following readings were taken by a 4m staff : 0.875, 1.225, 1.285, 1.425, 1.165, 0.785, 0.925, 1.225, 2.825, 0.895, 1.255, 1.685 and 0.915 The instrument was shifted after 5 <sup>th</sup> and 9 <sup>th</sup> reading. Enter the data in level book and calculate R.L. of all the points its first reading was taken on B.M. 100.00 apply check.	RGPV Jun 2020 CBGS
16	V imp	What do you understand by reciprocal leveling? Explain.  Or Define reciprocal levelling.  Or Write short note on Reciprocal levelling.	RGPV Jun 2020 RGPV Nov 2018 RGPV Dec 2015 RGPV Nov 2019 RGPV May 2018
17	V imp	What do you understand by Surveying? Also explain EDM.  Or Define surveying. States uses of surveying.	RGPV Jun 2020 RGPV Jun 2008 RGPV Jun 2016 RGPV Nov 2019
18	V imp	What is survey station? Where this term use?  Or Define survey station.  Or Explain survey station of its importance.  Or Write short on Survey station.  Or What are Survey stations and how to select a Survey station?	RGPV Nov 2018 RGPV Jun 2016 RGPV Dec 2016 RGPV Jun 2015 RGPV June 2020 RGPV June 2022
19		Explain about the term Plane table and its used instruments	RGPV Dec 2022
20	V imp	What are various types of error in chaining? Explain in brief.	RGPV Dec 2010 RGPV May 2018
21	V imp	What is local attraction? How it is detected at a station?  Or Write short note on local attraction.  Or What is local attraction? How it is detect at any station.	RGPV Dec 2017 RGPV Nov. 2018
22	V imp	Write short note on Planimeter.	RGPV May 2018 RGPV Nov 2018
23		Explain the principle of electronic distance measurement.	RGPV Jun 2015

**Important RGPV Questions**  
**BT-204 Basic Civil Engineering & Engineering Mechanics**

**UNIT 3**  
**Mapping & Sensing**

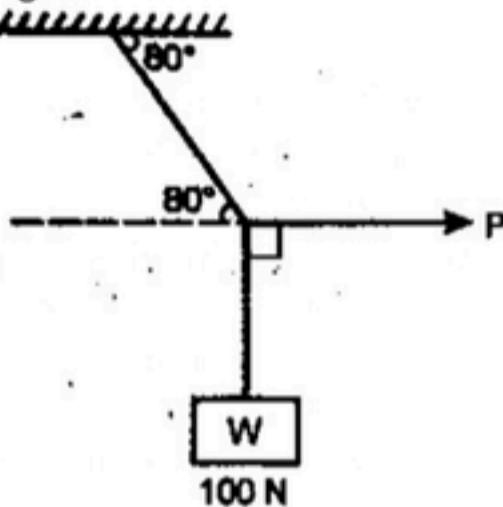
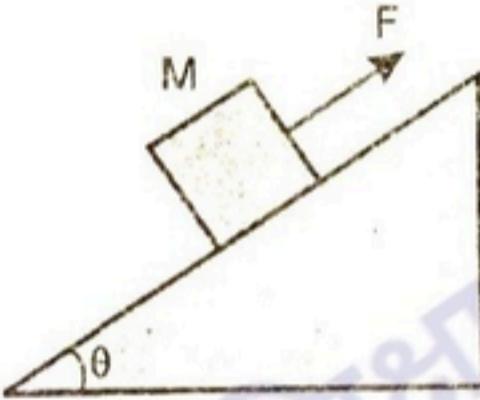
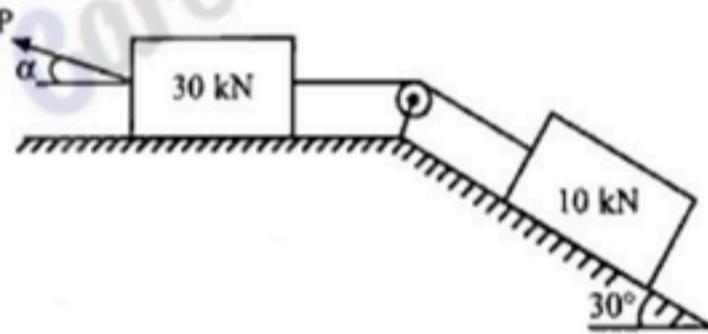
<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		What do you understand by the use of remote sensing and how it is work in the field of civil engineering? Explain clearly.	RGPV Jun 2020
2		Discuss us about the contour line, Contour Interval, Horizontal Interval and Use of Contour Map.	RGPV Dec 2022
3	V imp	Briefly discuss the properties of contour.  Or Enumerate various properties of contour.	RGPV Dec 2015 RGPV Jun 2016
4	V imp	Explain step by step procedure, how the capacity of reservoir can be determined using contour maps.  Or Explain how contour maps can be used to draw cross-sectioning and find out capacity of reservoir.	RGPV Jun 2012 RGPV Jun 2014
5		Explain the graphical method of interpolation of contour with example.	RGPV Dec 2014
6		An embankment of a width 10m and side slope of 1.5 : 1 is required to be made on a ground which is level in direction transverse to the centerline. The centre line heights at 40m intervals area as follows : 0.90, 1.25, 2.15, 1.85, 1.35, and 0.85 Calculate the volume of earth work according to trapezoidal and prismoidal method.	RGPV June 2022
7		The following offset were taken from a line to an irregular boundary line at an interval of 10m. 0, 2.50, 3.50, 5.00, 4.60, 3.20, 0 m Compute the area between the chain line, the irregular boundary line and the end offsets by i) Mid-Ordinate Rule ii) Average-Ordinate Rule iii) The Trapezoidal Rule iv) Simpson's Rule	RGPV June 2022
8	V imp	What do you understand by the term 'Contour'? Also explain properties of contour lines.  Or What do you mean by contour? Describe about the characteristics of the contours.  Or What do you understand by the term contour? Also explain properties of contour lines.	RGPV Jun 2020 RGPV Nov 2019 RGPV Nov 2018 RGPV Dec 2017 RGPV Dec 2012 RGPV Dec 2011
9		Write short note on contour interval.	RGPV Dec 2016
10		Explain the factors on which contour interval depends.	RGPV Jun 2014
11		Explain about the term Profile Cross-sectioning	RGPV Dec 2022

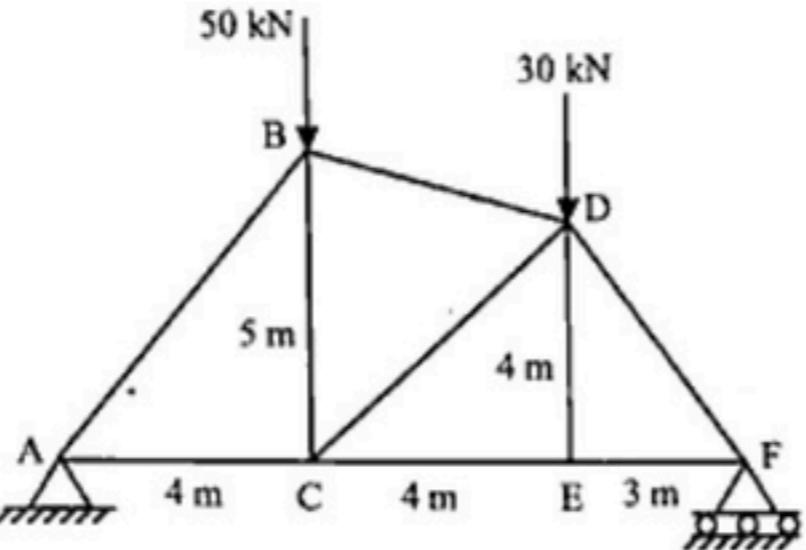
12	V imp	<p>Discuss various methods used for calculation of area.</p> <p><b>Or</b></p> <p>Explain in brief the various methods of measurement of area by offsets find the base line.</p>	RGPV Dec 2010 RGPV June 2015
13	V imp	<p>Explain methods for measuring the area and volume.</p> <p><b>Or</b></p> <p>List out with details of various methods to calculate area and volume in surveying.</p>	RGPV Dec 2012 RGPV Dec 2015
14		With reference to civil engineering practice explain what is meant by the prismoidal rule.	RGPV Jun 2015
15		<p>With reference to civil engineering practice explain what is mean by the following –</p> <p>(i) Trapezoidal and prismoidal rules</p> <p>(ii) Prismoidal corrections.</p>	RGPV Dec 2013
16	V imp	<p>State various applications of remote sensing.</p> <p><b>Or</b></p> <p>What is remote sensing? Give its applications to civil engineering.</p> <p><b>Or</b></p> <p>What do you understand by the use of remote sensing and how it work in the field of civil engineering? Explain clearly.</p> <p><b>Or</b></p> <p>Write explanatory note on applications of remote sensing.</p>	RGPV May 2019 RGPV Dec 2016 RGPV Jun 2016 RGPV Dec 2015

**Important RGPV Questions**  
**BT-204 Basic Civil Engineering & Engineering Mechanics**

**UNIT 4**  
**Forces and Equilibrium**

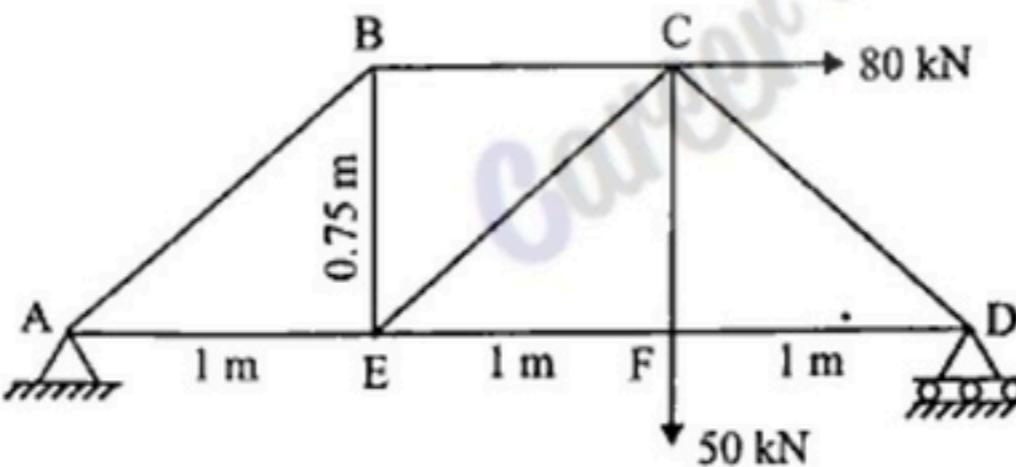
<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1	V imp	<p>Define coplanar and concurrent forces. Also explain concurrent forces with suitable practical examples.</p> <p>Or</p> <p>Write short note on – Coplanar and concurrent forces</p> <p>Or</p> <p>What do you understand by coplanar and concurrent forces?</p>	RGPV Dec 2020 RGPV Nov 2018 RGPV Nov 2019 RGPV Jun 2009 RGPV Dec 2015 RGPV May 2019 RGPV Jun 2020 RGPV Jun 2016
2	V imp	<p>Define various types of forces with the help of sketches.</p> <p>Or</p> <p>What are the various types of forces?</p>	RGPV Dec 2012 RGPV Dec 2014
3		<p>State and explain the law of polygon of forces.</p>	RGPV Jun 2019
4	V imp	<p>Explain the coulomb's law of friction.</p> <p>Or</p> <p>State and explain Coulomb's laws of dry friction.</p>	RGPV Jun 2014 RGPV Jun 2006 RGPV Jun 2008
5		<p>Find out the mass moment of inertial of a right circular cone of base radius R and mass M about the axis of the cone.</p>	RGPV Jun 2020 CBGS
6	V imp	<p>What is couple? Differentiate between moment and couple.</p> <p>Or</p> <p>Write short note on – Couple.</p>	RGPV Jun 2013 RGPV Dec 2016
7		<p>Write short notes on – Load and couple.</p>	RGPV May 2019
8	V imp	<p>State and prove Lami's theorem?</p> <p>Or</p> <p>Write short note on Lami's theorem.</p>	RGPV Jun 2020 CBGS RGPV Dec 2017 RGPV Jun 2016 RGPV Dec 2015
9	V imp	<p>Sate and prove Varignon's theorem?</p> <p>Or</p> <p>State and explain theorem of Varignon.</p> <p>Or</p> <p>Explain Varignon's theorem.</p>	RGPV Jun 2020 CBGS RGPV Jun 2014 RGPV Jun 2013 RGPV Jun 2011
10	V imp	<p>Define concept of free body diagram. Also show its applications.</p> <p>Or</p> <p>Define free body diagram.</p> <p>Or</p> <p>Explain the term free body diagram.</p>	RGPV Jun 2020 RGPV Dec 2020 RGPV May 2019 RGPV Nov 2019 RGPV Jun 2016
11	V imp	<p>Explain the following term : Bow's notations</p> <p>Or</p> <p>Define Bow's notation.</p> <p>Or</p> <p>Write short note on Bow's notations.</p>	RGPV Jun 2020 RGPV Dec 2020 RGPV May 2019 RGPV Nov 2019

12	V imp	What are different statically equilibrium conditions? Explain. Or Explain the condition of equilibrium.	RGPV Jun 2011 RGPV Dec 2019 RGPV Jun 2013 RGPV Jun 2007
13		State and derive the Lami's theorem and solve the problem given below using the theorem. 	RGPV Dec 2022
14		A block of mass $M = 10 \text{ kg}$ is sitting on a surface inclined at angle $\theta = 45^\circ$ . Given that the coefficient of static friction is $\mu_s = 0.5$ between block and surface, what is the minimum force $F$ necessary to prevent slipping? What is the maximum force $F$ that can be exerted without causing the block to slip? 	RGPV Dec 2022
15		Find the least value of $P$ required to cause the system of blocks shown in fig. P-511 to have impending motion to the left. The coefficient of friction under each block is 0.20. 	RGPV June 2022
16	V imp	What do you understand by Truss? Also explain any one method in details to analyse a plane truss. Or Write short note on trusses.	RGPV Jun 2020 RGPV Nov 2019 RGPV Nov 2018
17		Explain the method of joints.	RGPV Dec 2016
18		Calculate the force in the member show in fig. using the method of joints.	RGPV June 2022



19

Determine the force in members BC, CF and EF shown in fig. using the method of joints.



20

Write about the difference between Method of Joint and Method of Section.

RGPV June 2022

21

V imp

What are various methods to analyze a truss? Discuss limitation of each method.

Or

What are different methods to analysis a plane truss? Also explain their limitations.

RGPV Dec 2022

RGPV May 2010  
RGPV Dec 2015

22

V imp

What are the assumptions made while analyzing a frame?

Or

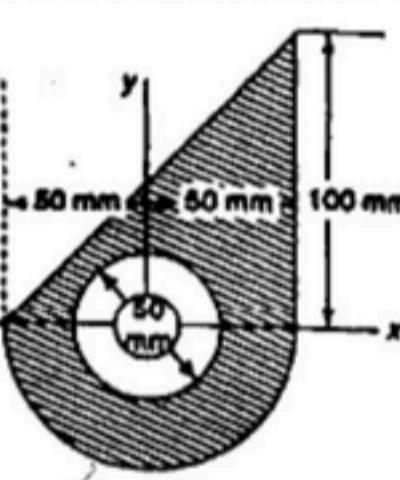
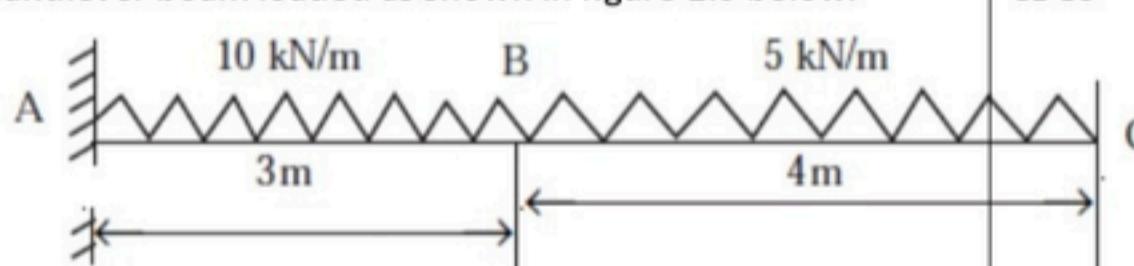
State the assumptions made in analysis of perfect plane trusses.

RGPV Dec 2016  
RGPV Feb 2010

**Important RGPV Questions**  
**BT-204 Basic Civil Engineering & Engineering Mechanics**

**UNIT 5**

**Centre of Gravity and moment of Inertia**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		Draw SFD and BMD for a simply supported beam of span 6m, subjected to a UDL of 5kN/m over its entire length.	RGPV Jun 2020 CBGS
2		Differentiate the difference between Moment of inertia and Product of inertia.	RGPV Dec 2022
3		Calculate the Moment of Inertia about the X-axis.  	RGPV Dec 2022
4		Draw shear force and bending moment diagram for a cantilever beam loaded as shown in figure 1.0 below.	RGPV Jun 2020 CBGS
			
5	V imp	Enumerate the expression for a moment of Inertia of Triangular lamina bout its base.	RGPV Jun 2020 CBGS RGPV Jun 2016
6	V imp	Define various types of beams and loadings with the help of neat sketches.  Or Show with the help of neat sketches the various types of beam and loading.	RGPV Dec 2012 RGPV Jun 2012
7	V imp	What types of loads are known to you? Explain.  Or What are the different types of load acting on a beam?	RGPV Jun 2008 RGPV Sept 2009
8	V imp	Draw the Shear force and Bending moment diagram for the simple supported beam carries a Uniform distributed load of intensity 'W' kN/m throughout a span of length 'L' m.	RGPV Dec 2022 RGPV June 2022
9	V imp	Explain about the Moment of inertia.  Or Explain principal of moment of inertia.	RGPV June 2022 RGPV Dec 2017
10	V imp	Explain about the term Centroid and Centre of Gravity  Or	RGPV Dec 2022 RGPV Dec 2015

		What do you understand by centre of gravity?	
11		Distinguish between centre of gravity and centroid.	RGPV Jun 2015
12	V imp	<p>Write short notes on Radius of Gyration  <b>Or</b>  Define radius of gyration and its uses.  <b>Or</b>  Explain radius of gyration of any section.</p>	RGPV June 2022 RGPV Nov 2019 RGPV Dec 2016 RGPV Jun 2020 RGPV Nov 2018 RGPV Jun 2016
13		Define C.G. and M.I.	RGPV Nov 2019
14	V imp	<p>Define and explain parallel axis theorem.  <b>Or</b>  State and prove the theorem of parallel axis.  <b>Or</b>  Define and deduce and expression for parallel axis theorem.</p>	RGPV Nov 2018 RGPV Dec 2015 RGPV Jun 2013
15		What do you mean by polar moment of inertia?	RGPV Jun 2014
16	V imp	Deduce an expression for moment of inertia of rectangular plane lamina about its centroidal axes which is parallel to base.	RGPV May 2019 RGPV Dec 2006
17	V imp	<p>Determine moment of inertia of the circle about its diametral axis using first principle.  <b>Or</b>  Find out the moment of inertia of a circular lamina about its diametral axis using first principle.</p>	RGPV Jun 2012 RGPV Dec 2011
18	V imp	<p>What is shear force and bending moment?  <b>Or</b>  Write short note on Shear force and bending moment.  <b>Or</b>  Define shear force and bending moment. Give the sign conventions for S.F. and B.M.</p>	RGPV Jun 2014 RGPV Jun 2016 RGPV Dec 2014 RGPV May 2019
19	V imp	<p>What is point of contraflexure? State and explain.  <b>Or</b>  What do you mean by point of contraflexure?  <b>Or</b>  What is the point of contraflexure?</p>	RGPV Jun 2008 RGPV Jun 2009 RGPV Jun 2010 RGPV Sep 2009

**Important RGPV Questions**  
**BT-205 Basic Computer Engineering**

**UNIT I**  
**Computer & Operating System**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1.	V Imp	<p>Discuss the classification computer with examples.  <b>Or</b>          Discuss the classification of computer.</p>	RGPV Dec 2022 RGPV Jun 2013 RGPV May 2019 RGPV Jun 2011 RGPV Dec 2012
2		Discuss the generation of computers	RGPV Jun 2011
3	V Imp	<p>Draw a model of basic Computer system and explain function of each part.  <b>Or</b>          Draw the block diagram of a computer. Explain each component.  <b>Or</b>          Explain the organization of computer with the help of diagram. Also write down the function of each part.  <b>Or</b>          What are the basic components of computer? Explain.  <b>Or</b>          Draw a model of basic computer system and explain function of each.</p>	RGPV Jun 2020 CBGS RGPV Jun 2020 RGPV Dec 2011,2017 RGPV Jun 2016,17 RGPV May 2018 RGPV Nov 2018,2019
4		Explain how CPU communicates with input/output devices.	RGPV Jun 2012
5	V Imp	<p>Explain about different types of buses and bus architecture.  <b>Or</b>          Explain bus architecture briefly.  <b>Or</b>          Explain different types of buses architecture.</p>	RGPV Dec 2013 RGPV Dec 2011 RGPV Jun 2013
6	V Imp	<p>Define Operating System. Briefly explain the function.  <b>Or</b>          Briefly explain the functions of operating system.</p>	RGPV Dec 2022 RGPV Jun 2020
7	V Imp	<p>What do you understand by the instruction set? What is the steps taken by the CPU to execute the instructions?  <b>Or</b>          What is an instruction set? Write down various steps taken by CPU to execute any instruction.</p>	RGPV Dec 2015 RGPV Dec 2017 RGPV Jun 2016
8		Explain the applications of computer in the field of Meteorology and Climatology, Multimedia and Animation.	RGPV Jun 2022
9		Discuss the uses of computer in the field of Bio-informatics, computer gaming, multimedia and animation.	RGPV Dec 2017
10	V Imp	<p>Briefly explain the functions of operating system.  <b>Or</b>          Explain the major functions performed by an operating system.  <b>Or</b>          What are the function of operating system?</p>	RGPV Jun 2022 RGPV Dec 2016 RGPV May 2018
11	V Imp	What is operating system? Explain the functions of operating system as resource manager.	RGPV Jun 2011 RGPV Dec 2010

		<p style="text-align: center;"><b>Or</b></p> <p>What is operating system? What are the different function of operating system?</p> <p style="text-align: center;"><b>Or</b></p> <p>Define operating system. Write down its functions.</p>	RGPV Jun 2013 RGPV Dec 2015 RGPV May 2019
12	V Imp	<p>What is the purpose of memory in a computer? What are volatile and non-volatile memories? Explain.</p> <p style="text-align: center;"><b>Or</b></p> <p>What is the purpose of main memory? Define the non-volatile memory.</p> <p style="text-align: center;"><b>Or</b></p> <p>Write the difference between a volatile memory and non-volatile memory.</p>	RGPV Jun 2011 RGPV Jun 2015 RGPV Dec 2011 RGPV Dec 2015
13		Explain different computer memories in RAM, ROM, CACHE, REGISTER and HARD DISK in detail.	RGPV Jun 2022
14		Distinguish between input unit and output unit.	RGPV Jun 2013
15	V Imp	<p>What is a register? How are registers used in the arithmetic logic and supervisory-control units of a CPU?</p> <p style="text-align: center;"><b>Or</b></p> <p>Define register. Write and explain the purpose of different types of registers.</p>	RGPV Dec 2013 RGPV Dec 2014 RGPV Nov 2018 RGPV Jun 2020 RGPV Jun 2013
16	V Imp	Discuss the applications of computer in the field of computer Gaming, Multimedia and Animation.	RGPV Jun 2020 RGPV Jun 2017
17		Describe the structure of UNIX operating system in detail.	RGPV Jun 2015
18	V Imp	<p>Explain how operating system performs file management functions.</p> <p style="text-align: center;"><b>Or</b></p> <p>Discuss how file management functions is performed by and OS.</p>	RGPV Dec 2010 RGPV Dec 2012
19	V Imp	Explain the applications of computer in the field of health care and remote sensing.	RGPV Nov 2019 RGPV Jun 2020
20	V Imp	What are input devices? Briefly explain some popular input devices.	RGPV Dec 2016 RGPV May 2018
21	V Imp	<p>Describe the role of computer in remote sensing and GIS field.</p> <p style="text-align: center;"><b>Or</b></p> <p>Distinguish between remote sensing and GIS.</p> <p style="text-align: center;"><b>Or</b></p> <p>Write a brief note on remote sensing and GIS.</p>	RGPV Dec 2013 RGPV Dec 2012 RGPV Dec 2014 RGPV Jun 2014
22		Write the names of different operating systems and differentiate them.	RGPV Jun 2020 CBGS
23	V Imp	Explain any five applications of Computer.	RGPV Jun 2020 CBGS RGPV Nov 2018
24	V Imp	<p>Explain System software and application software.</p> <p style="text-align: center;"><b>Or</b></p> <p>Differentiate between System software and application software.</p>	RGPV Jun 2020 CBGS RGPV Jun 2011 RGPV Dec 2014, 2011, 2016 RGPV May 2018, 2019
25	V Imp	Differentiate between RAM and ROM	RGPV Jun 2020 CBGS

**Important RGPV Questions**  
**BT-205 Basic Computer Engineering**

**UNIT II**

**Introduction to Algorithms & C++**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		Define algorithm.	RGPV May 208
2	V Imp	Write an algorithm to find largest number from array of n numbers.	RGPV Jun 2016 RGPV Jun 2016 CBGS
3		What do you mean by complexity of an algorithm? Explain time and space complexities.	RGPV Nov 2018
4	V Imp	What is flowchart? Explain different symbols used in flowchart.  Or  Define flowchart.	RGPV Dec 2015 RGPV May 2018
5		Write an algorithm that input 5 digit number and checks whether the given number is palindrome or not.	RGPV Dec 2014
6		Draw flowchart to display the greatest number from a given set of natural numbers.	RGPV Dec 2013
7		Why Algorithm writing and drawing flow chart is necessary before writing a computer program.	RGPV Dec 2022
8		Explain procedure oriented programming with example.	RGPV Jun 2010
9		Explain classification of programming languages with special emphasis of high level programming languages.	RGPV Jun 2014
10	V Imp	What is a Programming language? Differentiate Assembly level language and high level language.	RGPV Dec 2022 RGPV Jun 2016 RGPV May 2019
11	V Imp	Explain the concepts of OOP.  Or  Describe the basic concept of object-oriented programming.	RGPV Jun 2022 RGPV Dec 2011 RGPV Nov 2018
12		Explain all the features of object oriented programming in detail.  Or  Write down the characteristics of object oriented programming.  Or  What the salient features are of object oriented programming? Explain.	RGPV Nov 2018 RGPV May 2019 RGPV May 2018 RGPV Dec 2015 RGPV Dec 2014 RGPV Dec 2013
13	V Imp	Discuss the merits and demerits of OOPs.  Or  Discuss the feature and merits of OOPs.	RGPV Dec 2014 RGPV Dec 2012 RGPV Jun 2011
14	V Imp	Differentiate between procedure-oriented vs object oriented programming.  Or  Write down various differences between procedure oriented programming and object oriented programming.	RGPV Jun 2017 RGPV Jun 2016 RGPV Dec 2017
15	V Imp	What is C++ character set? What are tokens?	RGPV Jun 2020 CBGS RGPV May 2019
16	V Imp	Explain various data types in C++.  Or	RGPV Jun 2014 RGPV Nov 2018

		Explain the term data types.  Or Define data type.	RGPV May 2018
17		Define variable & expression.	RGPV May 2018
18	V Imp	Define the following : (a) Token (b) Expression	RGPV Jun 2020 CBGS RGPV May 2018 RGPV Jun 2016
19		Write a C++ program to insert and delete an element from stack.	RGPV Dec 2022
20		Discuss the structure of a C++ program with a suitable diagram.	RGPV Jun 2020 CBGS
21	V Imp	Explain the various kinds of looping statements in C++ with examples.  Or Explain the various kinds of looping statements in C++?	RGPV Jun 2022 RGPV Jun 2020
22	V Imp	Write a program in C++ to convert the given binary number into the decimal number.	RGPV Jun 2022 RGPV Jun 2020 RGPV Jun 2015
23	V Imp	Explain the different control statements in C++.  Or What control structures are used in C++.  Or What are control structures in C++ ? Explain any two control structure with example.  Or Explain various structures in C++ with examples.	RGPV Jun 2016 RGPV May 2019 RGPV Dec 2017 RGPV Nov 2019 RGPV Dec 2016 RGPV Jun 2015
24	V Imp	What is an Array? Explain different types of Arrays with syntax and suitable example program.  Or Explain the significance of array? What are different types of array?	RGPV Dec 2022 RGPV Jun 2020 RGPV Nov 2018 RGPV Dec 2015
25	V Imp	Define an array. What are its properties? Write a program in C++ to arrange numbers in an array in ascending order.	RGPV Dec 2017 RGPV Nov 2019
26		Write a C++ program to find the smallest number in given array of 100 integers.	RGPV Jun 2017
27	V Imp	Define program and function.	RGPV Dec 2013 RGPV Dec 2014
28		Explain the concept of function prototyping.	RGPV Jun 2014
29		How is structure different from an array?	RGPV Jun 2015

**Important RGPV Questions**  
**BT-205 Basic Computer Engineering**

**UNIT III**

**Object & Classes, Introduction to Data Structure**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1	V Imp	Compare object and class.  Or Define object and class.  Or What are the difference between a class and an object?	RGPV Jun 2013 RGPV May 2018 RGPV Dec 2014 RGPV Jun 2015
2	V Imp	What is class and object in C++? Explain with example.	RGPV Dec 2015 RGPV Jun 2016
3		What is a class? Explain the structure of a class with the help of an example. Differentiate between a class and structure.	RGPV Dec 2010
4		How function overloading and operator overloading is done? Explain them with a simple program.	RGPV Dec 2022
5	V Imp	What is a Constructor and Destructor? Explain them with a simple program.	RGPV Jun 2022 RGPV Jun 2016 RGPV Dec 2013
6	V Imp	Explain the different types of constructors in C++.	RGPV Dec 2012 RGPV Jun 2013 RGPV Dec 2013
7		Explain the concept of constructors and destructors with the help of program.	RGPV Dec 2017
8		Define Inheritance. Explain different types of inheritance with suitable program.	RGPV Jun 2022
9	V Imp	What is friend function? Explain it with a suitable example program.	RGPV Jun 2022 RGPV Jun 2016 RGPV Dec 2013 RGPV Nov 2018 RGPV May 2018
10	V Imp	What is inheritance? Explain various types of inheritance.  Or What is inheritance? Explain its types.  Or Define inheritance. Explain its types with example.  Or What do you mean by inheritance? Explain different types of inheritance.	RGPV Nov 2019 RGPV Nov 2018 RGPV Jun 2020 RGPV Jun 2016 RGPV Dec 2013 RGPV May 2019
11		What is the significance of friend function? How is friend function different from member function?	RGPV Jun 2020
12		What are friend functions? Explain their characteristics.	RGPV Dec 2016
13		What is a derived class? Explain with example.	RGPV Dec 2014
14		Write short note on polymorphism.	RGPV May 2018
15	V Imp	Explain and illustrate function overloading.  Or Explain the term function overloading with example.  Or Explain function overloading with the help of a program.	RGPV Jun 2013 RGPV Jun 2014 RGPV Jun 2015 RGPV Dec 2014

		<p style="text-align: center;"><b>Or</b></p> <p>What is function overloading? What are the scope rules for governing the functions overloading.</p>	
16	V Imp	<p>Define virtual function.</p> <p style="text-align: center;"><b>Or</b></p> <p>Write short note on virtual function.</p>	RGPV Dec 2017 RGPV May 2019 RGPV Nov 2019
17	V Imp	<p>Define data structure.</p> <p style="text-align: center;"><b>Or</b></p> <p>Write brief note on data structures. Differentiate between linear and nonlinear data structure.</p>	RGPV Jun 2016 RGPV Dec 2014
18		Define stack and describe different operations that can be performed on the stack.	RGPV Jun 2015

**Important RGPV Questions**  
**BT-205 Basic Computer Engineering**

**Unit IV**

**Computer Networking & Computer Security Basics**

<b>Q. No.</b>	<b>Remark</b>	<b>Questions</b>	<b>Exam</b>
1		Define computer networking.	RGPV Dec 2015
2		Write a brief notes on different types of networking devices.	RGPV Jun 2020
3		What computer networking? Write its advantages.	RGPV Dec 2015 CBGS
4	V Imp	What are the goals and applications of computer network? Explain.	RGPV Dec 2015 RGPV Dec 2014 RGPV Dec 2013
5		Explain LAN, MAN and WAN.	RGPV Jun 2011
6	V Imp	Explain the ISO-OSI model of computer network.  Or Explain OSI model.  Or Draw ISO-OSI model of computer networking? Explain function of each layer.  Or Explain the ISO-OSI model of computer network.	RGPV Jun 2020 CBGS RGPV Jun 2022, RGPV Jun 2020 RGPV Dec 2014 RGPV Dec 2016
7		Why data communication through circuit switching is not efficient.	RGPV Jun 2015
8		What is the function of network interface card?	RGPV Jun 2012
9		What is the function of modern device?	RGPV Jun 2012
10		Briefly discuss about repeater.	RGPV Jun 2013
11	V Imp	What is a bridge and how is it used?  Or Briefly discuss about bridge.  Or Explain the working of bridge.	RGPV Jun 2013 RGPV Dec 2013
12	V Imp	Explain the working of a router.  Or What is the function of router device?  Or Briefly discuss about router.	RGPV Jun 2011 RGPV Jun 2012 RGPV Dec 2013
13	V Imp	Write short note on networking devices.  Or Write the various networking devices.  Or Write a brief notes on different types of networking devices.  Or What are the various networking device? Explain briefly.	RGPV Dec 2013 RGPV Dec 2013 RGPV Jun 2016 RGPV Jun 2012
14		Write short notes on. (i) E-mail Spoofing (ii) Denial of service	RGPV Jun 2022
15	V Imp	Draw TCP/IP model of computer networking? Explain function of each layer.  Or Explain TCP/IP reference model in detail.  Or	RGPV Jun 2022 RGPV Dec 2011 RGPV Dec 2010 RGPV Jun 2011 RGPV Nov 2018

		<p>Write short note on TCP model.</p> <p><b>Or</b></p> <p>Explain TCP/IP protocol suite with the help of suitable block diagram.</p>	RGPV May 2018 RGPV Nov 2019
16	V Imp	<p>Differentiate OSI and TCP/IP model of computer network.</p> <p><b>Or</b></p> <p>Differentiate between TCP and IP.</p>	RGPV Jun 2020 CBGS RGPV Dec 2015 RGPV Jun 2016
17	V Imp	<p>Differentiate ISO-OSI with TCP/IP.</p> <p><b>Or</b></p> <p>Compare the OSI and TCP/IP models.</p> <p><b>Or</b></p> <p>Compare OSI and TCP/IP reference models on form of three merits and demerits.</p>	RGPV Dec 2022 RGPV Dec 2012 RGPV Jun 2017 RGPV Dec 2015 RGPV Jun 2015 RGPV Nov 2018
18	V Imp	Write short note on world wide web.	RGPV Jun 2011 RGPV Dec 2011 RGPV Jun 2013
19	V Imp	Explain the architecture of www. What is the difference Internet and world wide web.	RGPV Dec 2010 RGPV Dec 2012
20	V Imp	<p>What is E-Commerce? Write the advantages and disadvantages.</p> <p><b>Or</b></p> <p>Write short note on E-Commerce.</p>	RGPV Dec 2022, RGPV Jun 2020 RGPV Dec 2010 RGPV Dec 2011 RGPV Dec 2012
21		Explain following attacks in detail. (i) Logic Bombs (ii) E-mail spoofing	RGPV Jun 2020 CBGS
22		What is a firewall? How can it provide security to the system?	RGPV Dec 2022
23	V Imp	<p>Describe the term virus with its types.</p> <p><b>Or</b></p> <p>Write short note on virus.</p>	RGPV Dec 2013 RGPV Dec 2014 RGPV May 2018
24	V Imp	Describe the term worm with its types.	RGPV Dec 2013 RGPV Dec 2014
25		<p>Describe various types of malware.</p> <p><b>Or</b></p> <p>Briefly describe the different threats to network security.</p>	RGPV Jun 2012
26	V Imp	Describe the term Trojan with its types.	RGPV Dec 2013 RGPV Dec 2016
27		Write short note on money laundering.	RGPV Jun 2017
28	V Imp	<p>Discuss the term denial of services.</p> <p><b>Or</b></p> <p>Explain DoS attacks.</p> <p><b>Or</b></p> <p>Write short note on denial of services(DOS)</p>	RGPV Nov 2018 RGPV Nov 2019 RGPV Dec 2015
29	V Imp	<p>What do you know about cyber laws on internet fraud? Explain different types of cyber crimes.</p> <p><b>Or</b></p> <p>Explain different kinds of cyber crimes.</p> <p><b>Or</b></p> <p>Give a brief note on cyber law about internet fraud.</p>	RGPV Nov 2018 RGPV Jun 2012 RGPV Jun 2011

		What is data dictionary? What types of information is stored in data dictionary?  Or Write short note on data dictionary.	
12		Write short notes on : (a) BUS Architecture (b) MD Word Vs MS Excel (c) Polymorphism	RGPV Dec 2022
13	V Imp	Write shorts notes on : DBA	RGPV Dec 2022 RGPV Jun 2020 RGPV Dec 2015 RGPV Dec 2017
14	V Imp	Discuss the term primary key.  Or Write short note on primary key.  Or Define primary key.	RGPV Dec 2011 RGPV Jun 2016 RGPV Dec 2015 RGPV May 2018
15		Define alternate key.	RGPV May 2018
16	V Imp	Distinguish between primary key and candidate key.  Or Distinguish between primary key and candidate key with the help of an example.	RGPV Dec 2012 RGPV Jun 2014
17	V Imp	What do you understand by data definition language (DDL)?  Or Write short note on data definition language (DDL).  Or Define data definition language.	RGPV Jun 2020 RGPV Dec 2016 RGPV May 2018 RGPV May 2019
18	V Imp	Write short note on data manipulation language.  Or Write short note on DML.	RGPV Jun 2020 RGPV Dec 2016 RGPV May 2019
19		Explain DDL and DML commands with a suitable examples.	RGPV Dec 2022
20	V Imp	Write short note on cloud computing.	RGPV Dec 2017 RGPV May 2018 RGPV Nov 2018
21		Explain different types of clouds.	RGPV Dec 2022
22		Explain the terms cloud infrastructure.	RGPV Dec 2015
23		Write down the Pros and Cons of cloud Computing.	RGPV Jun 2022
24	V Imp	Define IaaS, PaaS and SaaS.  Or Write short not on IaaS, PaaS and SaaS.  Or Differentiate IaaS, PaaS and SaaS.	RGPV Jun 2022 RGPV Jun 2020 CBGS RGPV Nov 2018
25		Differentiate public, private and hybrid cloud.	RGPV Nov 2018
26		Write short notes on : (a) Good computer security habits (b) Data manipulation Language	RGPV Jun 2022
27		Write short notes on (a)Primary key (b) Cloud Infrastructure (c) types of cloud	RGPV Jun 2020
28	V Imp	Write short notes on any two. (a) Types of Cloud (b) Advantages of cloud computing	RGPV Jun 2020 CBGS RGPV Nov 2018