(Pages : 3) **E – 3492**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018
Career Related FDP under CBCSS
Group 2(a) : Physics and Computer Applications
Vocational Course – PC 1471
SOFTWARE ENGINEERING
(2014 Admission Onwards)

Time : 3 Hours Total Marks : 80

SECTION – A
(Very short answer type)

One word to maximum of **one** sentence. Answer **all** questions : **(10×1=10 Marks)**

1. What is Software Process ?
2. Expand DFD.
3. Expand COCOMO.
4. What is Functional Abstraction ?
5. What is Decision Tree ?
6. Expand OOD.
7. What is Design Walkthrough ?
8. What is the goal of Coding Activity ?
9. What is the basic purpose of testing ?
10. Which is the first level of testing ?

P.T.O.

SECTION – B
(Short answer)

Answer **any eight** questions. **Each** question carries **two** marks : **(8×2=16 Marks)**

11. What is the basic purpose of SRS ?
12. What is the major advantage of using natural language in SRS ?
13. What do you mean by 'Primary Actor' in Use Case ?
14. What is the purpose of a Quality Plan in a project ?
15. What is Cohesion ?
16. Name the different types of modules in structure Chart.
17. What is a Top-Down design approach ?
18. List the steps in the Design of Algorithm.
19. What is Memory Leak ?
20. What is Test Driven Development ?
21. What is Refracting ?
22. What is Cause – Effect Graphing ?

SECTION – C
(Short Essay)

Answer **any six** questions. **Each** question carries **four** marks : **(6×4=24 Marks)**

23. Discuss the activities in Project Management Process.
24. What are the characteristics of an SRS ?
25. Discuss the Specification Requirements of SRS.
26. Discuss the major issues Project Planning addresses.
27. What are the levels of Cohesion ?
28. Briefly explain Class Diagram of UML.

29. Draw the ER Diagram of Banking Enterprises.

30. Discuss Boundary value Analysis.

31. What are the different levels of testing ?

SECTION – D
(Long Essay)

Answer **any two** questions. **Each** question carries **15** marks : **(2×15=30 Marks)**

32. What are the different Software Development Process Models ? Explain.

33. Discuss the Function Oriented Design Principles.

34. Explain the verification methods of Detailed design.

35. Discuss Coding Standards.

E – 3491

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018
Career Related First Degree Programme under CBCSS
PHYSICS WITH COMPUTER APPLICATIONS
Core Course
PC 1442 – Optics
(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions in **one** or **two** sentences. **Each** question carries **one** mark.

1. What are the requirements for producing Haidinger fringes ?
2. How do we get circular fringes in the Newton's ring experiment ?
3. What is a zone plate ?
4. State the Rayleigh criterion for resolution.
5. Explain the role of Canada balsam in the construction of Nicol prism.
6. Write down the Cauchy's dispersion relation and explain the terms.
7. Draw the schematic representation of a fibre optic communication system.
8. What is the importance of retarders ?
9. What are the essential components of a laser ?
10. What is the role of He in He-Ne laser ? **(10×1=10 Marks)**

SECTION – B

Answer **any eight** questions, **not** exceeding a paragraph. **Each** question carries **two** marks.

11. What is an interferometer ? Explain the principle of the Michelson's interferometer.
12. Distinguish between normal and anomalous dispersion.

13. Show that the superposition of two sinusoidal waves having the same frequency, but with a phase difference, produces a sinusoidal wave with the same frequency but with a different amplitude.

14. Compare Fresnel and Fraunhofer diffractions.

15. What is resolution ? Explain different types of resolutions.

16. What are the characteristics of stimulated emission ?

17. Explain the characteristics of laser beam.

18. Explain a coherent bundle and its use.

19. Discuss pulse dispersion in step index fibre.

20. Explain the significance of the sodium vapour prism in the study of anomalous dispersion by Wood.

21. State and explain Malus's law.

22. What are ordinary and extraordinary rays ? Explain. **(8×2=16 Marks)**

SECTION – C

Answer any **six** questions. **Each** question carries **four** marks.

23. A glass wedge of angle 0.01 radian is illuminated by monochromatic light of wavelength 532 nm falling normally on it. At what distance from the edge of the wedge will the 8^{th} fringe be observed by reflected light ?

24. The initial and final readings of a Michelson interferometer screw are 9.8357 mm and 9.7913 mm as 160 fringes pass. Calculate the wavelength of the light used.

25. Deduce the missing orders for a double slit Fraunhofer diffraction pattern, if the slit widths are 0.4 mm and they 0.8 mm apart.

26. Find the separation of two points on the moon that can be resolved by a 600 cm telescope. The distance of the moon is 4×10^5 km. The eye is more sensitive to 550 nm.

27. The refractive index of water is 1.33. Find the critical angle and Brewster angle for water. Also find the angle of refraction corresponding to the polarization angle.

28. A half wave plate is fabricated for a wavelength of 400 nm. For what wavelength does it work as a quarter wave plate ?

29. At what temperature are the rates of spontaneous and stimulated emission equal ? Assume λ = 550 nm.

30. In an optical fibre the refractive indices for core and cladding are 1.50 and 1.33 respectively. What is the value of the critical angle ? Also find the angle of acceptance of cone.

31. Using Snell's law find the numerical aperture for a step index fibre.

(6×4=24 Marks)

SECTION – D

Answer **any two** questions. **Each** question carries **fifteen** marks.

32. Describe Young's double slit experiment and derive an expression for fringe width.

33. Analyze the various cases of polarization due to the superposition of waves linearly polarized at right angles.

34. Explain the working of a ruby laser.

35. Discuss the theory of diffraction at a straight edge and show that the bands produced are not equally spaced. **(2×15=30 Marks)**

(Pages : 3) **E – 3491**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018
Career Related First Degree Programme under CBCSS
PHYSICS WITH COMPUTER APPLICATIONS
Core Course
PC 1442 – Optics
(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions in **one** or **two** sentences. **Each** question carries **one** mark.

1. What are the requirements for producing Haidinger fringes ?
2. How do we get circular fringes in the Newton's ring experiment ?
3. What is a zone plate ?
4. State the Rayleigh criterion for resolution.
5. Explain the role of Canada balsam in the construction of Nicol prism.
6. Write down the Cauchy's dispersion relation and explain the terms.
7. Draw the schematic representation of a fibre optic communication system.
8. What is the importance of retarders ?
9. What are the essential components of a laser ?
10. What is the role of He in He-Ne laser ? **(10×1=10 Marks)**

SECTION – B

Answer **any eight** questions, **not** exceeding a paragraph. **Each** question carries **two** marks.

11. What is an interferometer ? Explain the principle of the Michelson's interferometer.
12. Distinguish between normal and anomalous dispersion.

P.T.O.

13. Show that the superposition of two sinusoidal waves having the same frequency but with a phase difference, produces a sinusoidal wave with the same frequency but with a different amplitude.

14. Compare Fresnel and Fraunhofer diffractions.

15. What is resolution ? Explain different types of resolutions.

16. What are the characteristics of stimulated emission ?

17. Explain the characteristics of laser beam.

18. Explain a coherent bundle and its use.

19. Discuss pulse dispersion in step index fibre.

20. Explain the significance of the sodium vapour prism in the study of anomalous dispersion by Wood.

21. State and explain Malus's law.

22. What are ordinary and extraordinary rays ? Explain. **(8×2=16 Marks)**

SECTION – C

Answer any **six** questions. **Each** question carries **four** marks.

23. A glass wedge of angle 0.01 radian is illuminated by monochromatic light of wavelength 532 nm falling normally on it. At what distance from the edge of the wedge will the 8^{th} fringe be observed by reflected light ?

24. The initial and final readings of a Michelson interferometer screw are 9.8357 mm and 9.7913 mm as 160 fringes pass. Calculate the wavelength of the light used.

25. Deduce the missing orders for a double slit Fraunhofer diffraction pattern, if the slit widths are 0.4 mm and they 0.8 mm apart.

26. Find the separation of two points on the moon that can be resolved by a 600 cm telescope. The distance of the moon is 4×10^5 km. The eye is more sensitive to 550 nm.

27. The refractive index of water is 1.33. Find the critical angle and Brewster angle for water. Also find the angle of refraction corresponding to the polarization angle.

28. A half wave plate is fabricated for a wavelength of 400 nm. For what wavelength does it work as a quarter wave plate ?

29. At what temperature are the rates of spontaneous and stimulated emission equal ? Assume $\lambda = 550$ nm.

30. In an optical fibre the refractive indices for core and cladding are 1.50 and 1.33 respectively. What is the value of the critical angle ? Also find the angle of acceptance of cone.

31. Using Snell's law find the numerical aperture for a step index fibre.

(6×4=24 Marks)

SECTION – D

Answer **any two** questions. **Each** question carries **fifteen** marks.

32. Describe Young's double slit experiment and derive an expression for fringe width.

33. Analyze the various cases of polarization due to the superposition of waves linearly polarized at right angles.

34. Explain the working of a ruby laser.

35. Discuss the theory of diffraction at a straight edge and show that the bands produced are not equally spaced. **(2×15=30 Marks)**

(Pages : 3) **E – 3497**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018
Career Related First Degree Programme Under CBCSS
PHYSICS WITH COMPUTER APPLICATIONS
Core Course
PC 1441 : Classical Mechanics and Theory of Relativity
(2015 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions in **one** or **two** sentences **each**. **Each** carries **1** mark.

1. Write down the Galilean transformation equations.
2. What are inertial forces ?
3. Explain the concept of a central force.
4. Discuss length contraction.
5. Define reduced mass of a two particle system.
6. Write down the differential equation for simple harmonic motion.
7. Explain the Hamiltonian function of a system.
8. Explain the term proper mass.
9. State the postulates of the Special Theory of Relativity.
10. What are conservative forces ? Give two examples. **(10×1=10 Marks)**

P.T.O.

SECTION – B

Answer **any 8** questions. **Each** carries **2** marks.

11. Distinguish between holonomic and non holonomic constraints with an example each.

12. What are the possible orbits in motion under inverse square law forces ? Give the eccentricities of each.

13. State and explain the principle of virtual work.

14. What is centrifugal force ?

15. Is the earth an inertial frame ? Explain.

16. Explain the twin paradox.

17. Explain the relativistic expression between energy and linear momentum.

18. Discuss the term quality factor of a harmonic oscillator.

19. Compare Lagrangian and Newtonian mechanics.

20. State and explain Kepler's laws of planetary motion.

21. Describe the important properties of Tachyons.

22. Explain the motion of two particles connected by a spring. **(8×2=16 Marks)**

SECTION – C

Answer **any 6** questions. **Each** carries **4** marks.

23. Which of the following forces are conservative ?

    a) $F=(2xy+yz^2)\hat{i}+(x^2+xz^2)\hat{j}+2xyz\hat{k}$ and

    b) $F=(y^2-x^2)\hat{i}+3xy\hat{j}$.

24. Show that angular momentum is a constant under central force motion.

25. A spring is stretched through a distance of 8 cm by a body of mass 16 kg. If the body is replaced by another body of mass 50 gm and the system undergoes oscillations, find the time period.

26. A simple harmonic oscillator has time period 0.001 seconds and amplitude 0.5 cm. Find the acceleration when it is at a distance of 0.2 cm from the mean position and also find the maximum velocity.

27. A rod has length 1 m in its rest frame. It is moving with a velocity of 0.4 c relative to the earth. Fins its length when viewed in a frame (a) moving with the rod and (b) situated on the earth.

28. Write down the Lagrange's equations of motion for the Atwood's machine and obtain its solution.

29. Find the period of revolution of Mars given that the major axis of Mars is 1.5237 times that of the earth.

30. Find the speed at which the kinetic energy of a moving particle becomes equal to its rest energy.

31. A particle of mass 10 g is at rest in an inertial frame. Consider a frame rotating at an angular speed of 10 radians per second in which the body is at a distance of 5 cm from the axis of rotation. Find the Coriolis and centrifugal forces on the body in the rotating frame. **(6×4=24 Marks)**

SECTION – D

Answer **any 2** questions. **Each** carries **15** marks.

32. Derive the mass-energy relation $E = mc^2$. Also show that the relativistic expression for kinetic energy reduces to the classical one for low velocities compared to c.

33. Obtain Lagrange's equations of motion from D'Alembert's principle.

34. Obtain the expressions for kinetic and potential energies of a simple harmonic oscillator. Hence show that the average kinetic energy equals the average potential energy over one cycle.

35. Derive the Lorentz transformation equations from the postulates of Relativity. Also derive the inverse transformation equations. **(2×15=30 Marks)**

(Pages : 2) E – 3335

Reg. No. : .....

Name : .....

Fourth Semester B.A./B.Sc. Degree Examination, July 2018
First Degree Programme Under CBCSS
LANGUAGE COURSE : READINGS IN LITERATURE
Common for B.A./B.Sc. EN 1411.1 (Language Course VIII) and Career Related 2(a) (Language Course VI) EN 1411.3
(2015 Admission Onwards)

Time : 3 Hours Max. Marks : 80

I. Answer **all** questions, **each** in **a word** or **sentence**.

1) "All the world's a stage" is an excerpt from the play
2) What is the meaning of the title "La Belle Dame Sans Merci" ?
3) "We are on a darkling plain/Swept away with confused alarms of struggle and fight" are the lines taken from the poem
4) Who is the aged wife mentioned in Tennyson's "Ulysses" ?
5) Which is the great annual fair mentioned in Nehru's essay "Independence and After" ?
6) Who is the co-founder of the organization 'Umkhonto we sizwe' ?
7) Whose pen name is Saki ?
8) Who is Dr. Raman's dearest friend in Narayan's story ?
9) What was the intention of the banker behind visiting the room of the lawyer just before the completion of fifteen years of imprisonment ?
10) In MT's short story, who named the cat as Sherlock ? **(10×1=10 Marks)**

II. Answer **any eight**, **each** in **a short paragraph not** exceeding **50** words.

11) How does Wordsworth describe nature in the poem "Leech Gatherer" ?
12) What is Yeat's final prayer for his daughter ?
13) Discuss Owen's "Insensibility" as a War Poem.

P.T.O.

14) Give a description of the Constable in the poem "A Constable Calls".

15) How does Sarojini Naidu challenge fate who may take away her power of articulation ?

16) What did Kamala Das do to ignore her womanliness ?

17) Discuss the message of the poem "Mending Wall".

18) Humour in the poem "Stammer".

19) What are the advantages of tolerance over love according to Forster ?

20) What are the features of moral religion according to Einstein ?

21) How is the theme of love presented in the short story "Yellow is the colour of Longing" ?

22) Relevance of the title "Open Window". **(8×2=16 Marks)**

III. Answer **any six each** in **a paragraph not** exceeding **100** words.

23) How does Shakespeare present Jacques's view of life ?

24) Discuss "Ulysses" as a dramatic monologue.

25) Discuss "Dover Beach" as a poem which represent the Victorian Age.

26) What is Priestley's opinion about American life ?

27) How does Einstein relate science and religion ?

28) Nehru's reputation as a hero.

29) How did Dr. Raman handle the crisis ?

30) Discuss the techniques used by H. H. Munro in the story "The Open Window".

31) Setting of the story "Sherlock". **(6×4=24 Marks)**

IV. Answer **any two each** in about **three hundred** words.

32) Discuss the philosophy of life presented by Tennyson in his poem "Ulysses".

33) How does Priestley present a world of leisure and relaxation in his essay "On Doing nothing" ?

34) Write an essay on the ideals for which Mandela is prepared to die.

35) Narayan's stories are his observation of personal lives. Discuss with reference to his short story "The Doctor's Word". **(15×2=30 Marks)**

(Pages : 4) **E – 3480**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018
Career Related First Degree Programme under CBCSS
Group 2(a) : Complementary Course for Physics and Computer Applications
MM 1431.6 : MATHEMATICS – IV – Linear Transformations, Vector Integration and Complex Analysis
(2013 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – I

All the first **10** questions are **compulsory**. They carry **1** mark **each**.

1. Write the matrix representation of contraction with factor k on $\mathbb{R}^2$.
2. Find the reflection of (–1, 2) about the line y = x.
3. Show that the transformation $T : \mathbb{R}^3 \to \mathbb{R}^3$ defined by T(a, b, c) = (4a – 2b, bc, c) is not linear.
4. Let $T : \mathbb{R}^2 \to \mathbb{R}^2$ be the linear transformation that maps each vector into its orthogonal projection on the x-axis. What is the matrix representation of T with respect to the standard basis ?
5. What is the physical interpretation of divergence of a vector field $\vec{F}$?
6. State Stoke's theorem.
7. Let z = x + iy, find Im $[(1 + i)^8 z^2]$.
8. Express $f(z) = 2iz + 6\bar{z}$ in the form (x, y) + iv (x, y).
9. State Cauchy's Integral formula for derivatives.
10. Evaluate $\int_0^{\pi} e^{it}\, dt$.

P.T.O.

SECTION – II

Answer **any 8** questions from among the questions **11** to **22**. These questions carry **2** marks **each**.

11. Find the transformation from $\mathbb{R}^3$ to $\mathbb{R}^2$ that has the matrix representation

$\begin{bmatrix} 1 & 2 & 5 \\ 4 & -1 & 2 \end{bmatrix}$ with respect to the standard basis of $\mathbb{R}^3$ and the basis $\{(1, 1), (1, -1)\}$ of $\mathbb{R}^2$.

12. Consider a linear transformation from $\mathbb{R}^2$ to $\mathbb{R}^3$ given by $T(a, b) = (-a, a + b, a - b)$. Find the matrix representation of this transformation with respect to the basis $\{(2, 1), (1, 7)\}$ of $\mathbb{R}^2$ and the standard basis of $\mathbb{R}^3$.

13. Find the coordinates of the vector (2, 1, 3, 4) of $\mathbb{R}^4$ relative to the basis

$\{(1, 1, 0, 0), (1, 0, 1, 1), (2, 0, 0, 2), (0, 0, 2, 2)\}$.

14. Find the work done by the force field $\vec{F}(x, y, z) = xyi + yzj + xzk$ on a particle that moves along the curve $\vec{r}(t) = ti + t^2j + t^3k$, $0 \le t \le 1$.

15. Evaluate the line integral $\int_C (x^2 - y^2)\,dx + x\,dy$ along the curve $= t^{2/3}, y = t, -1 \le t \le 1$.

16. Find the divergence of $\vec{F}(x, y) = (x^2 - y)\,i + (xy - y^2)\,j$.

17. Find the principal branch of $\log(-ei)$.

18. Sketch the graph of $0 < |z - 1| < 1$.

19. Find all values of $(-8i)^{1/3}$.

20. Evaluate $\int_C \operatorname{Re} z\,dz$ where C is the shortest path from 0 to $1 + 2i$.

21. Evaluate $\int_C \frac{z+2}{z}\,dz$ where C is the circle $z = 2e^{it}$, $0 \le t \le 2\pi$.

22. Evaluate $\int_C \frac{1}{z^2 + 2z + 2}\,dz$ where C is the unit circle $|z| = 1$.

SECTION – III

Answer **any 6** questions from among the questions **23** to **31**. These questions carry **4** marks **each**.

23. Consider the linear transformation $F : \mathbb{R}^2 \to \mathbb{R}^2$ defined by $F(x, y) = (3x + 4y, 2x - 5y)$. Find the matrix representing F relative to the basis $\{(1, 2), (2, 3)\}$ of $\mathbb{R}^2$.

24. The matrix $A = \begin{bmatrix} 1 & -2 & 1 \\ 3 & -1 & 0 \\ 1 & 4 & -2 \end{bmatrix}$ represents a linear transformation from $\mathbb{R}^3$ to $\mathbb{R}^3$ with respect to the basis $\mathcal{B} = \{(1, 0, 0), (0, 1, 0), (0, 0, 1)\}$. Find the matrix that represents the linear transformation relative to the basis $S = \{(1, 1, 1), (0, 1, 1), (1, 2, 3)\}$.

25. Find a potential function of a vector field $\vec{F}(x, y) = 2xy^3i + (1 + 3x^2y^2)j$, if the vector field is conservative.

26. Use the Divergence theorem to find the outward flux of the vector field $\vec{F}(x, y, z) = x^3i + y^3j + z^2k$ across the surface of the region that is enclosed by the circular cylinder $x^2 + y^2 = 9$ and the planes $z = 0$ and $z = 2$.

27. Using Green's theorem evaluate the line integral $\oint_C y^2dx + x^2dy$ where C is the square with vertices (0, 0), (1, 0), (1, 1) and (0, 1) oriented counterclockwise.

28. Show that $\cos z = \cos x \cosh y - i \sin x \sinh y$.

29. Is $f(z) = u(x, y) + iv(x, y) = e^x(\cos y + i \sin y)$ analytic ? Explain.

30. Find the value of the integral $\int_C \frac{1}{z^3(z+4)}dz$ taken counterclockwise around the circle $|z| = 2$.

31. Find the principal value of $(-i)^i$.

SECTION – IV

Answer **any 2** questions from among the questions **32** to **35**. These questions carry **15** marks **each**.

32. Let $A = \begin{bmatrix} 5 & 6 \\ 3 & -2 \end{bmatrix}$ be the matrix representation of a linear transformation on $\mathbb{R}^2$.

Find a suitable basis for $\mathbb{R}^2$ so that the matrix representation of the given linear transformation is a diagonal matrix.

33. Evaluate the surface integral $\iint_\sigma y^2z^2\, ds$ where σ is the part of the cone $z = \sqrt{x^2 + y^2}$ that lies between the planes $z = 1$ and $z = 2$.

34. a) Verify that $u(x, y) = 2x(1 - y)$ is harmonic in the whole complex plane and find a harmonic conjugate function $v(x, y)$ of u.

b) Let $f(z) = \begin{cases} \dfrac{\bar{z}^2}{z} & \text{when } z \neq 0 \\ 0 & \text{when } z = 0 \end{cases}$

verify whether the Cauchy-Riemann equations are satisfied at the origin.

35. Let C be the circle $|z| = 3$ in counterclockwise direction. Show that if

$g(s) = \int_C \dfrac{2z^2 - z - 2}{z - s}\, dz$, $(|s| \neq 3)$, then $g(2) = 8\pi i$. What is the value of $g(s)$ when $|s| > 3$?

(Pages : 3) **E – 3493**

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2018

Career Related FDP Under CBCSS

Group 2(a) : Physics and Computer Applications

Vocational Course-PC 1472

OBJECT ORIENTED PROGRAMMING

(2014 Admission Onwards)

Time : 3 Hours Total Marks : 80

PART – A

Answer **all** questions. **(10×1=10 Marks)**

1. Define the term min heap.
2. What is a destructor in C++ ?
3. Write syntax to define a class.
4. What is the purpose of delete operator in C++ ?
5. What is an extraction operator in C++ ?
6. What is early dynamic binding ?
7. Write syntax to use scope resolution operator.
8. What keyword is used in sub class definition to specify super class name ?
9. What are anonymous objects ?
10. What is the data type in C++ to define a character ?

P.T.O.

PART – B

Answer **any 8** questions. **(8×2=16 Marks)**

11. What do you mean by a friend function ?
12. What is a copy constructor ? Write suitable example.
13. Write syntax of try... catch statement.
14. What is the use of 'this' pointer ?
15. What are the features of static data members ?
16. What are various access modifiers in C++ ?
17. Write a C++ program to find roots of quadratic equation.
18. How is a pure virtual function implemented in C++ ?
19. Write how variables can be declared in C++ ?
20. What do you mean by message passing ?
21. What do you mean by dynamic objects ?
22. How protected keyword usage differs from private keyword ?

PART – C

Answer **any 6** questions. **(6×4=24 Marks)**

23. Short note on structured programming techniques.
24. What are the advantages of object orientation ?
25. Write a short note on constructors and its types. Write a suitable example.
26. With an example explain unary operator overloading.
27. Write specialities of virtual base class. Explain with example.
28. Explain virtual functions with example.

29. Write a C++ program to define a super class employee and to derive sub class manager. Use necessary data members and functions.

30. Explain how late binding can be implemented in C++ ?

31. Short note on data types in C++.

PART – D

Answer **any two** questions : **(2×15=30 Marks)**

32. Explain object oriented programming features.

33. Explain various type of inheritance in C++ with examples.

34. With example explain exception handling in C++.

35. Write a C++ program to implement overloading. Explain function overloading.