

This question paper contains 7 printed pages]

G—207—2015

FACULTY OF ARTS/SCIENCE

B.A./B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

MATHEMATICS

Paper III (MT-103)

(Integral Calculus)

(MCQ + Theory)

(Saturday, 11-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :- (i) Attempt All questions.

(ii) Figures to the right indicate full marks.

(iii) First 30 minutes for Q. No. 1 MCQ and 2 hours for theory.

(iv) Negative marking system for MCQ is applicable.

(v) Use black ball point pen to darken the circle of correct answer in OMR answer-sheet. Circle once darkened is final.

P.T.O.

(MCQ)

1. Choose the *correct* alternative for each of the following : 10

(i) $\int \lambda \cos x \, dx = \dots\dots\dots$

(a) $\frac{1}{2} \lambda \cos x + c$

(b) $\frac{1}{2} \lambda^2 \cos x + c$

(c) $\lambda \sin x + c$

(d) $\lambda \cos x + c$

(ii) The integral of the product of *two* functions = $\dots\dots\dots$

(a) First function \times integral of second - integral of {diff. coeff. of first \times integral of second}

(b) Second function \times integral of first - integral of {diff. coeff. of first \times integral of second}

(c) First function \times integral of second + integral of {diff. coeff. of first \times integral of second}

(d) Second function \times integral of first + integral of {diff. coeff. of first \times integral of second}

(iii) $\int \operatorname{cosec}^2 x \, dx = \dots\dots\dots$

(a) $\cot x$

(b) $-\cot x$

(c) $\tan x$

(d) $-\tan x$

(iv) $\int \cos^n x \, dx = \dots\dots\dots$

(a) $\frac{\cos^{n-1} x \sin x}{n} + \frac{n-1}{n} \int \cos^{n-2} x \, dx$

(b) $\frac{\cos^{n-1} x \sin x}{n} + \frac{n}{n-1} \int \cos^{n-2} x \, dx$

(c) $\frac{\cos^{n-2} x \sin x}{n} + \frac{n-1}{n} \int \cos^{n-2} x \, dx$

(d) $\frac{\cos^{n-1} x \sin x}{n-1} + \frac{n-1}{n} \int \cos^{n-2} x \, dx$

(v) $\int_{-a}^a f(x) \, dx = 0$, according as $f(x)$ is $\dots\dots\dots$

(a) an even function

(b) an odd function

(c) both (a) and (b)

(d) neither (a) nor (b)

(vi) $\int_a^b x^2 dx = \dots\dots\dots$

(a) $\frac{1}{3}a^3 - \frac{1}{3}b^3$

(b) $\frac{1}{3}a^3 + \frac{1}{3}b^3$

(c) $\frac{1}{3}b^3 + \frac{1}{3}a^3$

(d) $\frac{1}{3}b^3 - \frac{1}{3}a^3$

(vii) If A is a region bounded by the curves $y = f_1(x)$, $y = f_2(x)$,

$x = a$ and $x = b$ then $\iint_A f(x, y) dA = \dots\dots\dots$

(a) $\int_a^b \left\{ \int_{f_1(x)}^{f_2(x)} f(x, y) dy \right\} dx$

(b) $\int_a^b \left\{ \int_{f_2(x)}^{f_1(x)} f(x, y) dy \right\} dx$

(c) $\int_a^b \left\{ \int_{f_1(x)}^{f_2(x)} f(x, y) dy \right\} dy$

(d) $\int_a^b \left\{ \int_{f_1(x)}^{f_2(x)} f(x, y) dx \right\} dy$

(viii) The beta function $B(m, n)$ for $m > 0, n > 0$ given by the relation :

(a) $B(m, n) = \int_0^1 x^{n-1}(1-x)^{m-1} dx$

(b) $B(m, n) = \int_0^1 x^{m-1}(1-x)^{n-1} dx$

(c) $B(m, n) = \int_1^0 x^{m-1}(1-x)^{n-1} dx$

(d) $B(m, n) = \int_1^0 x^{n-1}(1+x)^{m-1} dx$

(ix) $\Gamma(1/2) = \dots\dots\dots$

(a) π

(b) $\frac{\pi}{2}$

(c) $\sqrt{\pi}$

(d) $\frac{\sqrt{\pi}}{2}$

(x) $B(m, n) = \dots\dots\dots$

(a) $\frac{\Gamma(m) \Gamma(n)}{\Gamma(mn)}$

(b) $\frac{\Gamma(m) \Gamma(n)}{\Gamma(m+n)}$

(c) $\frac{\Gamma(m) \Gamma(n)}{\Gamma(m-n)}$

(d) $\frac{\Gamma(m+n)}{\Gamma(m) \Gamma(n)}$

(Theory)

2. Attempt any two of the following : 5 each

(a) Derive the reduction formula for

$$\int \sin^n x \, dx$$

(b) Prove that :

$$\int x^m (a + bx^n)^p \, dx = \frac{x^{m+1}(a + bx^n)^p}{np + m + 1} + \frac{anp}{np + m + 1} \int x^m (a + bx^n)^{p-1} \, dx$$

(c) Integrate :

$$\frac{x}{(x-3)\sqrt{x+1}}$$

3. Attempt any two of the following : 5 each

(a) Prove that :

$$\int \tan^n x \, dx = \frac{\tan^{n-1} x}{n-1} - \int \tan^{n-2} x \, dx$$

(b) If f is a continuous function of x in the finite domain $[a, b]$ and

$$\frac{dF(x)}{dx} = f(x), \text{ then prove that :}$$

$$\lim_{n \rightarrow \infty} h[f(a) + f(a+h) + f(a+2h) + \dots + f(a+(n-1)h)] = F(b) - F(a)$$

(c) Integrate :

$$\int \sin^7 x \, dx$$

4. Attempt any *two* of the following :

5 each

(a) Show that :

$$\int_0^{\pi/2} \cos^{2m-1} \theta \sin^{2n-1} \theta d\theta = \frac{\Gamma(m)\Gamma(n)}{2\Gamma(m+n)}$$

(b) Evaluate :

$$\int_0^1 \int_0^{\sqrt{1+x^2}} \frac{dx dy}{1+x^2+y^2}$$

(c) Find the area included between the cycloid

$$x = a(\theta - \sin\theta)$$

$$y = a(1 - \cos\theta)$$

and its base.

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G—240—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

PHYSICS

Paper III

(Kinetic theory, Heat and Thermodynamic)

(MCQ + Theory)

(Monday, 20-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

- N.B. :—*
- (i) Attempt All questions.
 - (ii) Question No. 1 is MCQ type. Answer MCQs on OMR sheet only.
 - (iii) Question Nos. 2, 3 and 4 are descriptive type questions.
 - (iv) Use separate answer book/sheet for MCQ type questions and descriptive type questions.
 - (v) Time allotted for MCQ examination is 30 minutes and for descriptive examination is 2 hours only.
 - (vi) Negative marking system is applicable to MCQ examination.

P.T.O.

(MCQ)

1. Attempt *all* multiple choice questions : 10

(i) Viscosity of a gas is due to transport of

(a) Momentum

(b) Energy

(c) Mass

(d) Entropy

(ii) The average distance travelled by the gas molecule between two successive collisions is

(a) $\frac{3}{\pi d^2 n}$

(b) $\frac{\pi d}{n^2}$

(c) $\frac{1}{\pi d^2 n}$

(d) $\frac{2}{\pi d^2 n}$

(iii) The Boyle Temperature is given by

(a) $T_B = \frac{2a}{Rb}$

(b) $T_B = \frac{a}{Rb}$

(c) $T_B = \frac{a}{R^2b}$

(d) $T_B = \frac{8a}{27Rb}$

(iv) The correction in pressure by van der Waals' is

(a) $P = \frac{2a}{V^2}$

(b) $P = \frac{a}{V}$

(c) $P = \frac{3a}{V}$

(d) $P = \frac{a}{V^2}$

(v) The critical coefficient of a gas is given by

(a) $\frac{RT_c}{P_c V_c}$

(b) $\frac{T_c}{P_c V_c}$

(c) $\frac{P_c T_c}{R V_c}$

(d) $\frac{R}{T_c V_c P_c}$

(vi) In an adiabatic process

(a) $PV^{\gamma-1} = \text{constant}$

(b) $PV^{\gamma+1} = \text{constant}$

(c) $PV^{\gamma} = \text{constant}$

(d) $\gamma \cdot PV = \text{constant}$

(vii) The efficiency of Carnot engine is ($T_1 > T_2$)

(a) $\eta = 1 + \frac{T_2}{T_1}$

(b) $\eta = 1 - \frac{T_2}{T_1}$

(c) $\eta = 1 + \frac{T_1}{T_2}$

(d) $\eta = 1 - \frac{T_1}{T_2}$

(viii) Second law of thermodynamic in terms of entropy

(a) $d\theta = \frac{T}{ds}$

(b) $d\theta = \frac{ds}{T}$

(c) $d\theta = \frac{1}{T ds}$

(d) $d\theta = T ds$

(ix) The Clausius-Clayperon Latent heat equation

(a) $\frac{dP}{dT} = \frac{L}{T(V_2 - V_1)}$

(b) $\frac{dP}{dT} = \frac{L^2}{T(V_2 - V_1)}$

(c) $\frac{dP}{dT} = \frac{L}{T^2(V_2 - V_1)}$

(d) $\frac{dP}{dT} = \frac{T(V_2 - V_1)}{L^2}$

(x) Helmholtz free energy function is defined by

(a) $F = u + TS$

(b) $F = \frac{u}{TS}$

(c) $F = u - TS$

(d) $F = u + PV$

(Theory)

2. Attempt any five of the following questions :

10

(i) Define mean free path of a gas molecule.

P.T.O.

- (ii) Draw a neat labelled diagram of Joule-Thomson porous plug experiment.
- (iii) Define Boyle temperature.
- (iv) State second law of thermodynamics.
- (v) Define adiabatic process.
- (vi) State Helmholtz function of a system.
- (vii) Write Maxwell's thermodynamical relation when :

$$x = S \text{ and } y = V.$$

3. Attempt any *two* of the following questions : 10

- (i) Obtain an expression for coefficient of diffusion in terms of mean free path of a gas molecule.
- (ii) Explain Boyle Temperature. Give its conclusions.
- (iii) Explain change in entropy in irreversible process.
- (iv) Prove the thermodynamical relation :

$$Tds = C_V dT + T \left(\frac{\delta P}{\delta T} \right)_V dV.$$

4. Attempt any *one* of the following questions : 10

- (i) Describe Andrew's experiment on carbon dioxide. Discuss the result obtained by him.
- (ii) Obtain general expression for Maxwell's Thermodynamical relations.

This question paper contains 7 printed pages]

G—211—2015

FACULTY OF SCIENCE

B.Sc. (Second Semester) EXAMINATION

MARCH/APRIL, 2015

MATHEMATICS

Paper IV

(Geometry)

(MCQ+Theory)

(Monday, 13-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :— (i) All questions are compulsory.

(ii) First 30 Minutes for Q. No. 1 and remaining time for other questions.

(iii) Figures to the right indicate full marks.

(iv) Use Black Ball Pen to darken the circle on OMR sheet for Q. No. 1.

(v) Negative marking system is applicable for Q. No. 1 (MCQ).

(MCQ)

1. Choose the correct alternative for each of the following. 1 each

(1) The direction cosines of the X-axis are :

(a) 1, 1, 1

(b) 1, 0, 0

(c) 0, 1, 0

(d) 0, 0, 1

P.T.O.

- (2) The angle between the planes $ax + by + cz + d = 0$ and $a'x + b'y + c'z + d' = 0$ is :

(a) $\cos^{-1}(aa' + bb' + cc')$

(b) $\sin^{-1}(aa' + bb' + cc')$

(c) $\cos^{-1}\left(\frac{aa' + bb' + cc'}{\sqrt{(\Sigma a^2)(\Sigma a'^2)}}\right)$

(d) $\sin^{-1}\left(\frac{aa' + bb' + cc'}{\sqrt{(\Sigma a^2)(\Sigma a'^2)}}\right)$

- (3) The intercepts made on the axes by the plane

$$x + 2y - 2z = 9$$

are :

(a) 1, 2, -2

(b) $\frac{1}{9}, \frac{2}{9}, \frac{-2}{9}$

(c) $9, \frac{9}{2}, \frac{-9}{2}$

(d) None of the above

- (4) The angle between planes $2x - y + z = 6$, $x + y + 2z = 7$

is :

(a) $\cos^{-1}\left(\frac{4}{\sqrt{21}}\right)$

(b) $\frac{\pi}{3}$

(c) $\frac{\pi}{4}$

(d) $\frac{\pi}{2}$

- (5) The equation of line through the point (1, 2, 3) parallel to

line $\frac{x-4}{2} = \frac{y+1}{-3} = \frac{z+10}{8}$ are :

(a) $\frac{x-1}{2} = \frac{y-2}{-3} = \frac{z-3}{8}$

(b) $\frac{x-1}{1} = \frac{y-2}{2} = \frac{z-3}{3}$

(c) $\frac{x-4}{1} = \frac{y+1}{2} = \frac{z+10}{3}$

(d) $\frac{x+1}{2} = \frac{y+2}{+3} = \frac{z+3}{-8}$

- (6) The number of arbitrary constants in the equation of straight

line is :

(a) 6

(b) 0

(c) 2

(d) 4

- (7) The lines $\frac{x-1}{2} = \frac{y-1}{3} = \frac{z-3}{0}$ and $\frac{x-2}{0} = \frac{y-3}{0} = \frac{z-4}{1}$

are :

(a) Perpendicular

(b) Skew

(c) Parallel

(d) Intersecting

- (8) Centre of sphere $(x - x_1)(x - x_2) + (y - y_1)(y - y_2) + (z - z_1)(z - z_2) = 0$ is

(a) $\left(\frac{x_1 - x_2}{2}, \frac{y_1 - y_2}{2}, \frac{z_2 - z_1}{2} \right)$

(b) $\left(\frac{x_2 - x_1}{2}, \frac{y_2 - y_1}{2}, \frac{z_2 - z_1}{2} \right)$

(c) $(x_1 + x_2, y_1 + y_2, z_1 + z_2)$

(d) $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$

- (9) Every section of a right circular cone by a plane perpendicular to its axis is a :

(a) Circle

(b) Cylinder

(c) Plane

(d) Right circular cylinder

- (10) The length of perpendicular from any point on a right circular cylinder to its axis is equal to its :

(a) Diameter

(b) Latus rectum

(c) Radius

(d) None of the above

(Theory)

2. Attempt any *two* of the following : 5 each

(A) Prove that every equation of the first degree in x, y, z represents a plane.

(B) Prove that two points $A(x_1, y_1, z_1)$ and $B(x_2, y_2, z_2)$ lie on the same or different sides of the plane :

$$ax + by + cz + d = 0,$$

according as the expression

$$ax_1 + by_1 + cz_1 + d, ax_2 + by_2 + cz_2 + d$$

are of the same or different signs.

(C) Prove that :

$$\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma = 2$$

where α, β, γ are the angles made by a line with the positive direction of the axes.

3. Attempt any *two* of the following : 5 each

- (A) Find the conditions for the line :

$$\frac{x - x_1}{l} = \frac{y - y_1}{m} = \frac{z - z_1}{n}$$

to lie in the plane

$$ax + by + cz + d = 0$$

- (B) Find the length of perpendicular from a given point

$P(x_1, y_1, z_1)$ to a given line :

$$\frac{x - \alpha}{l} = \frac{y - \beta}{m} = \frac{z - \gamma}{n}$$

- (C) Show that the lines :

$$\frac{x - 4}{1} = \frac{y + 3}{-4} = \frac{z + 1}{7}, \quad \frac{x - 1}{2} = \frac{y + 1}{-3} = \frac{z + 10}{8}$$

intersect and find the coordinates of point of intersection.

4. Attempt any *two* of the following : 5 each

- (A) Find equation to a sphere on line joining $A(x_1, y_1, z_1)$

$B(x_2, y_2, z_2)$ as diameter.

- (B) Find the equation of the cone whose vertex is the point (α, β, γ) and whose generators intersects the conic :

$$ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0, z = 0.$$

- (C) Find the equation of sphere through the circle :

$$x^2 + y^2 + z^2 = 9, 2x + 3y + 4z = 5$$

and the point $(1, 2, 3)$.

This question paper contains 4+2 printed pages]

G—244—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

PHYSICS

Paper IV

(Electricity and Magnetism)

(MCQ + Theory)

(Tuesday, 21-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :- (i) All questions are compulsory.

(ii) Non-programmable calculator and log table is allowed.

(iii) Figures to the right indicate full marks.

(iv) Symbols have their usual meanings.

(MCQ)

1. Choose the *correct* alternative :

10

(i) Frequency of parallel resonance circuit $f_0 =$

(a) $\frac{1}{2\pi\sqrt{LC}}$

(b) $\frac{1}{2\pi}\sqrt{\frac{1}{LC}}$

(c) $\sqrt{\frac{1}{LC}}$

(d) $\frac{1}{LC}$

P.T.O.

(ii) Efficiency of transformer $\eta =$

(a) $1 - \frac{\text{losses}}{\text{output} + \text{losses}}$

(b) $1 + \frac{\text{losses}}{\text{output} + \text{losses}}$

(c) $1 + \frac{\text{losses}}{\text{output} - \text{losses}}$

(d) none of the above

(iii) The coefficient of mutual inductance of a pair of circuit is :

(a) $M = \frac{-e}{dI/dt}$

(b) $M = \frac{e}{dq/dt}$

(c) $M = \frac{-e}{dq/dt}$

(d) None of the above

(iv) The SI unit of self-inductance is :

(a) Ohm

(b) Volt

(c) Henry

(d) Hertz

(v) \vec{B} is magnetic induction, its MKS unit is :

- (a) tesla
- (b) Weber/m²
- (c) both (a) and (b)
- (d) none of the above

(vi) In B.G. the charge reduction factor 'K' is given by :

(a) $\frac{nBA}{c}$

(b) nBA

(c) BA/c

(d) $\frac{c}{nAB}$

(vii) The 1st and 11th throw of B.G. are 20 and 10 cm respectively,

its logarithmic decrement is :

(a) 0.369

(b) 0.963

(c) 0.0693

(d) None of the above

(viii) The relation for Lorentz force law $\vec{F} =$

(a) $q_0 [\vec{E} + \vec{V} \times \vec{B}]$

(b) $\vec{E} + \vec{B}$

(c) $\vec{E} \times \vec{B}$

(d) None of the above

(ix) The Ampere's law in general form can be stated as :

(a) $\oint_C \vec{B} dl = \mu_0 I$

(b) $\mu_0 I dl \sin \theta$

(c) $\frac{\mu_0}{4\pi} \times I dlr$

(d) $\oint \vec{B} dl = \frac{\mu_0 I}{2\pi}$

(x) The balance condition for a.c. bridge is :

(a) $\frac{R_2}{R_1} = \frac{R_3}{R_4}$

(b) $\frac{R_1}{R_3} = \frac{R_2}{R_4}$

(c) $\frac{R_1}{R_2} = \frac{R_3}{R_4}$

(d) $\frac{R_2}{R_1} = \frac{R_4}{R_3}$

(Theory)

2. Attempt any *five* of the following : 10

- (a) Define intensity of magnetisation
- (b) Define the term self-inductance.
- (c) Give the relation between current, voltage and turns ratio of the transformer.
- (d) State Biot and Savart's law.
- (e) What is Choke coil ?
- (f) Write down the principle of B.G.
- (g) Define magnetic field.

3. Attempt the following : 10

- (a) Define permeability, susceptibility and hence obtain the relation between them.

Or

State Faraday's law of electromagnetic induction and obtain its integral form.

- (b) Obtain an expression for charge circulated through B.G. and show it is proportional to the throw obtained i.e. $q \propto \theta$

Or

Explain the mutual induction of a pair of coil.

4. Attempt any *one* of the following : 10
- (1) Obtain an expression for average power in an a.c. circuit and hence define power factor. Obtain an expression for power factor of inductive circuit and capacitive circuit.
- (2) Using Biot and Savart's law find an expression for the magnetic induction due to current carrying straight conductor (wire).

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M—32—2015

FACULTY OF COMPUTER STUDIES

B.Sc. (C.S.) (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

COMPUTER SCIENCE

Paper S2.4

(Digital Hardware Interaction using C)

(Thursday, 16-4-2015)

Time : 10.00 a.m. to 1.00 p.m.

Time—Three Hours

Maximum Marks—80

N.B. :— (i) All questions are compulsory.

(ii) From questions 2 to 4 solve either (a) and (b) or (c) and (d).

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data if necessary.

1. Attempt the following :

20

(a) Explain one's complement operator.

(b) What is structure ? Explain initialization of structure.

(c) Explain operations of keyboard.

(d) Discuss dynamic memory allocation.

P.T.O.

WT

(2)

M-32-2015

2. (a) Write the difference between structure and union. 8
(b) Explain mouse interrupt in detail. 7

Or

- (c) What is interrupt ? Explain interrupt vector table in detail. 8
(d) Explain addressing modes in detail. 7
3. (a) Discuss error handling during I/O operations. 8
(b) Explain int 86() function in detail. 7

Or

- (c) Explain components of VDU. 8
(d) Explain keyboard interrupt (16 h). 7
4. (a) Discuss opening a file. 8
(b) What is pointer ? Explain near, far and huge pointers. 7

Or

- (c) Explain RUMBIOS philosophy in detail. 8
(d) Explain ports. Discuss how to detect installed ports. 7
5. Write short notes on the following (any three) : 15
(a) Write pixel and read pixel
(b) Command line arguments
(c) Bitwise operator
(d) Video display modes
(e) Colors in SVGA.

This question paper contains 4 printed pages]

G—246—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

COMPUTER APPLICATION

Paper III

(Programming with Basic)

(MCQ + Theory)

(Wednesday, 22-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—10+30=40

N.B. :— All questions are compulsory.

(MCQ)

1. Choose correct answer of the following questions : 10

(i) Program line length.....characters.

(a) 255

(b) 256

(c) 254

(d) 253

P.T.O.

(ii)command is used to clear the screen.

(a) clear

(b) cler

(c) cls

(d) clr

(iii)command is used to run program.

(a) load

(b) List

(c) Run

(d) auto

(iv)are input statement.

(a) Read

(b) Data

(c) Print

(d) Both (a) and (b)

(v)statement is used to include remarks in basic program.

(a) REM

(b) LET

(c) PRINT

(d) READ

- (vi)are types of computer languages.
- (a) HLL
 - (b) MLL
 - (c) ALL
 - (d) All of the above
- (vii)is used to convert a program written in assembly language to MLL.
- (a) Interpreter
 - (b) Compiler
 - (c) Assembler
 - (d) None of the above
- (viii)symbol is used to denote the beginning and end of flowchart.
- (a) Terminal
 - (b) I/O
 - (c) Flowlines
 - (d) Connector
- (ix) Connector is small.....
- (a) Rectangle
 - (b) Square
 - (c) Circle
 - (d) None of the above

(x)is a diagrammatic representation of the solution of a problem.

(a) Algorithm

(b) Flowchart

(c) Data

(d) Information

(Theory)

2. Define subroutine. Explain GOSUB and RETURN statements. 10

Or

(a) Explain modifying data of file. 5

(b) Explain on-goto statement. 5

3. Define array. Explain processing one and two-dimensional arrays. 10

Or

(a) Explain Input output statements. 5

(b) Explain machine level and high level language. 5

4. Explain structure of Basic program and Basic program key words. 10

Or

(a) Explain If else and Nested-if. 5

(b) Explain calling function in basic program. 5

This question paper contains 8 printed pages]

G—214—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

CHEMISTRY

Paper III

(Organic and Inorganic Chemistry)

(MCQ + Theory)

(Wednesday, 15-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—10+30=40

N.B. :- (i) Attempt All questions.

(ii) All questions carry equal marks.

*(iii) Use separate answer-sheet (OMR sheet) for MCQ
No. 1.*

*(iv) Also use separate answer-sheets for theory Section A and
Section B.*

P.T.O.

(MCQ)

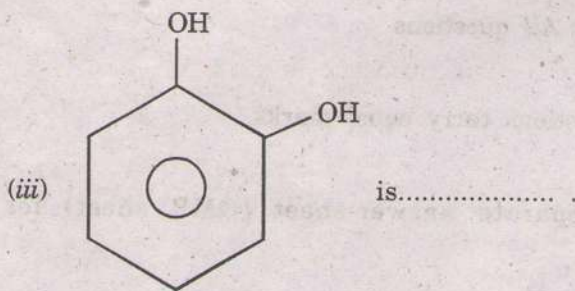
1. Select the *correct* answer for each of the following multiple choice questions : 10

(i) Which of the following is/are aromatic in nature ?

- (a) Furan
- (b) Benzene
- (c) Anthracene
- (d) All of the above

(ii) In nitration of benzeneis an electrophile.

- (a) NO^{\oplus}
- (b) NO_2^{\oplus}
- (c) NO_3^{\oplus}
- (d) Both (b) and (c)



- (a) Catechol
- (b) Resorcinol
- (c) Quinol
- (d) Pyrogallol

(iv) Organic compounds in which -OH group is directly attached to an aromatic ring are called as :

- (a) Alcohol
- (b) Carboxylic acid
- (c) Phenol
- (d) Ester

(v) Ullmann reaction is.....reaction.

- (a) Addition
- (b) Coupling
- (c) Substitution
- (d) Elimination

(vi) In Dow's process, chlorobenzene is converted into :

- (a) Phenol
- (b) Benzene
- (c) 1, 2-dichlorobenzene
- (d) None of the above

(vii) Hydrolysis of.....gives acetic acid.

- (a) Acetyl chloride
- (b) Acetic anhydride
- (c) Acetamide
- (d) All of the above

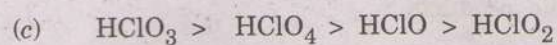
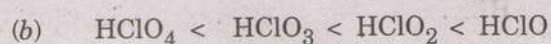
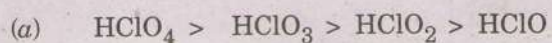
(viii) According to solvent system concept, NH_4Cl is :

- (a) Salt
- (b) Acid
- (c) Base
- (d) None of the above

(ix) Which of the following has highest electron affinity ?

- (a) F
- (b) I
- (c) Br
- (d) Cl

(x) Correct order of acid strength of oxyacids of chlorine is :



(d) None of the above

(Theory)

Section A

(Organic Chemistry)

2. Answer any two of the following :

(a) Explain ortho-para directing nature of $-\text{OH}$ group in phenol and meta-directing nature of $-\text{NO}_2$ group in nitrobenzene.

(b) Explain Kolbe's carboxylation reaction of phenol with mechanism.

(c) (i) Give the synthesis of vinyl chloride from :

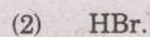
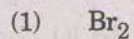
(1) 1, 2-dichloroethane

(2) Ethene

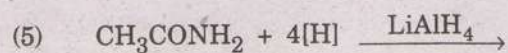
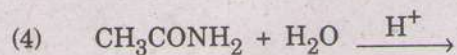
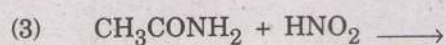
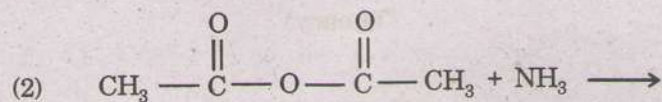
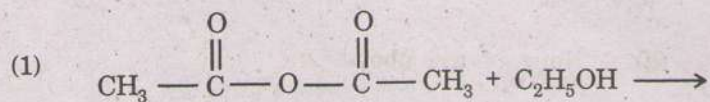
(3) Ethyne

P.T.O.

(ii) What is the action of the following on vinyl chloride ?



(d) Predict the products :



3. Answer any two of the following :

(a) What are main sources of aromatic hydrocarbons ? Discuss

Friedal-Craft acetylation reaction of benzene with mechanism.

(b) (i) Explain acidic character of phenol.

(ii) Explain why pyrrol and furan are aromatic in nature.

(c) What is the action of the following on allyl iodide :

(1) NaOH

(2) KCN

(3) NH_3

(4) AgNO_2

(5) Br_2

(d) How will you prepare :

(1) Chlorobenzene from benzene diazonium chloride;

(2) Ethyl acetate from acetic acid;

(3) Ethyl acetate from acetyl chloride;

(4) Acetyl chloride from acetic acid;

(5) Acetamide from acetyl chloride ?

Section B

(Inorganic Chemistry)

4. Answer any *two* of the following :

(a) Discuss variation in oxidising and reducing properties of 'p' block elements.

P.T.O.

- (b) (i) Write in brief periodic trend of atomic radius in 'p' block elements.
- (ii) Define acids and bases according to Bronsted-Lowry concept with examples.
- (c) Explain the effects of Hydration and other energies on relative strength of acids.
- (d) Explain Lewis and solvent system concept of acids and bases with suitable examples.

This question paper contains 7 printed pages]

G—219—2015

FACULTY OF SCIENCE

B.Sc. (Second Semester) EXAMINATION

MARCH/APRIL, 2015

CHEMISTRY

Paper IV

(Physical and Inorganic Chemistry)

(MCQ + Theory)

(Thursday, 16-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :—(i) Attempt all questions.

(ii) All questions carry equal marks.

(iii) Use separate answer-sheet (OMR sheet) for question No. 1.

(iv) Use separate answer-sheets for Section A and Section B (Theory).

P.T.O.

(MCQ)

1. Select the *correct* answer for each of the following multiple choice questions.

(i) 'Balmer Series' in hydrogen spectrum lies in

(a) Ultraviolet region

(b) Visible region

(c) Infrared region

(d) None of the above

(ii) 'The electrons in various orbitals are arranged according to their increasing order of energy' is statement of :

(a) Aufbau's principle

(b) Hund's rule of maximum multiplicity

(c) Pauli's exclusion principle

(d) None of the above

(iii) Surface tension of a liquid is measured by using :

(a) Viscometer

(b) Eudiometer

(c) Stalagmometer

(d) Refractometer

(iv) "The precipitation power of an ion increases with increase in the valency of ions." This rule is known as :

- (a) Brownian rule
- (b) Hardy-Schulze rule
- (c) Gold number rule
- (d) None of the above

(v) Which of the following is not a colloidal system ?

- (a) Sodium chloride
- (b) Butter
- (c) Paint
- (d) Milk

(vi) The enzyme which can catalyse the conversion of glucose to ethanol is :

- (a) Maltase
- (b) Invertase
- (c) Zymase
- (d) Urease

(vii) Arsenic oxide (As_2O_3) in contact process acts as a :

(a) Catalyst

(b) Promoter

(c) Poison

(d) Enzyme

(viii) Dipole-dipole interactions (van der Waals' forces) are observed

in :

(a) He

(b) N_2

(c) NH_3

(d) None of the above

(ix) Polarization of ion is affected by :

(a) Charge on cation

(b) Charge on anion

(c) Sizes of cation and anion

(d) All of the above

(x) The bond order in Ne_2 molecule is

(a) One

(b) Two

(c) Three

(d) Zero

(Theory)

Section A

(Physical Chemistry)

2. Answer any *two* of the following :

(a) State the postulates of Bohr's atomic theory.

(b) Derive the relationship between parachor and surface tension.

(c) Explain the optical properties of colloids.

(d) Discuss homogeneous and heterogeneous catalysis with examples.

P.T.O.

3. Answer any *two* of the following :

(a) Explain :

(i) Rutherford's atomic model;

(ii) Hund's rule of maximum multiplicity.

(b) What are gels ? How are they classified ? Give their properties.

(c) What are the characteristics of catalytic reactions ?

(d) (i) Calculate the radius of second Bohr's orbit of H-atom.

(ii) In an experiment with Ostwald's viscometer, the times of flow of water and ethanol are 85 and 180 sec at 20°C.

The density of water = 0.998 gcm^{-3} and that of ethanol = 0.80 gcm^{-3} . The viscosity of water at 20°C is 0.01008 poise. Calculate the viscosity of ethanol.

Section B

(Inorganic Chemistry)

4. Answer any *two* of the following :

(a) What is Lattice Energy ? How will you calculate lattice energy by using Born-Haber cycle ?

- (b) What is hydrogen bonding ? Describe in brief the types of hydrogen bonding.
- (c) (i) H_2S is gas whereas H_2O is liquid at room temperature. Explain.
- (ii) Give postulates of VSEPR theory.
- (d) What is LCAO method ? Explain the formation of Bonding and Antibonding molecular orbitals by LCAO method.

This question paper contains 4+1 printed pages]

G—206—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

BOTANY

Paper III

(Diversity of Cryptogams)

(MCQ + Theory)

(Saturday, 11-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—10+30=40

N.B. :— (i) Attempt All questions.

(ii) All questions carry equal marks.

(iii) Use separate answer-sheet for MCQ (OMR sheet) and descriptive questions.

(iv) Time allotted to MCQ is 30 minutes and to descriptive questions is 2:00 hours.

(v) Draw well-labelled diagrams wherever necessary.

P.T.O.

(MCQ)

1. Choose the *correct* answers of the following questions :

(i) Cap cells are found in

(a) *Batrachospermum*

(b) *Ectocarpus*

(c) *Chara*

(d) *Oedogonium*

(ii) is a red alga.

(a) *Batrachospermum*

(b) *Chara*

(c) *Oedogonium*

(d) *Ectocarpus*

(iii) Chantransia stage occurs in

(a) *Oedogonium*

(b) *Batrachospermum*

(c) *Ectocarpus*

(d) *Chara*

- (iv) Pleurilocular sporangia are present in
- (a) Chara
 - (b) Oedogonium
 - (c) Ectocarpus
 - (d) Batrachospermum
- (v) Fertile part of capsule of Funaria is
- (a) Columella
 - (b) Spore sac
 - (c) Annulus
 - (d) Peristome
- (vi) Female sex organ of Riccia is
- (a) Archegonium
 - (b) Ascogonium
 - (c) Antheridium
 - (d) Nucule

- (vii) The gametophyte which is differentiated into root-like rhizoids, stem-like axis and leaf-like appendages is called
- (a) Thalloid gametophyte
 - (b) Leafy gametophyte
 - (c) Leafy sporophyte
 - (d) Thalloid sporophyte
- (viii) Vallecular canals are present in the stem of
- (a) Funaria
 - (b) Marsilea
 - (c) Lycopodium
 - (d) Equisetum
- (ix) Heterosporous pteridophyte is
- (a) Marsilea
 - (b) Equisetum
 - (c) Lycopodium
 - (d) None of the above
- (x) Equisetum is also known as
- (a) Clubmoss
 - (b) Horsetail
 - (c) Stonewort
 - (d) Liverwort

(Theory)

2. Describe the mode of sexual reproduction in macrandrous species of Oedogonium.

Or

Explain in brief :

- (a) Nucule of Chara
- (b) General characters of algae.

3. Describe external and internal structure of thallus of Funaria.

Or

Write in short :

- (a) Antheridium of Riccia
- (b) General characters of Bryophytes.

4. Describe the internal structure of rhizome of Marsilea.

Or

Describe in brief :

- (a) Classification of Pteridophytes
- (b) Structure of spore of equisetum.

This question paper contains 4 printed pages]

G—210—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

BOTANY

Paper IV

(Genetics and Plant Breeding)

(MCQ+Theory)

(Monday, 13-4-2015)

Time : 2.00 p.m. to 4.30 noon

Time—2½ Hours

Maximum Marks—40

N.B. :— (i) Attempt all questions.

(ii) All questions carry equal marks.

(iii) Use separate answer-sheet for MCQ (OMR sheet) and descriptive questions.

(iv) Time allotted to MCQ is 30 minutes and to descriptive questions is 2.00 hours.

(v) Draw well labelled diagrams wherever necessary.

(MCQ)

1. Choose the *correct* answers :

(i)is a cross between two pure parents of two contrasting forms of two characters.

(a) Monohybrid

(b) Dibybrid

(c) Test

(d) Back

P.T.O.

- (ii) A cross between F_1 individual and recessive parent is known as.....cross.
- (a) Monohybrid
 - (b) Dihybrid
 - (c) Test
 - (d) Back
- (iii) The ratio of complementary gene is.....
- (a) 9 : 3 : 3 : 1
 - (b) 9 : 7
 - (c) 9 : 3 : 4
 - (d) 12 : 3 : 1
- (iv) The characters are expressed only in males and are passed on directly from father to son are known as.....
- (a) X-linked genes
 - (b) Holoandric genes
 - (c) Autosome
 - (d) None of the above
- (v)is shown by those sex linked genes which are localized as homologous section of X and Y chromosomes.
- (a) X-linked inheritance
 - (b) Y-linked inheritance
 - (c) X-Y linked inheritance
 - (d) None of the above

- (vi) XY male and XX female type of sex determination is formed in.....
- (a) Birds
 - (b) Man
 - (c) Insects
 - (d) None of the above
- (vii) The hybrid of *Triticum dicoccoides* and *Aegilops squarrosa* and doubled the chromosome number in the F1 hybrid is similar to.....
- (a) *Triticum spelta*
 - (b) *Arachis hypogea*
 - (c) *Raphano brassica*
 - (d) None of the above
- (viii) The additional chromosome represented by three homologous is known as.....
- (a) Nullisomy
 - (b) Monosomy
 - (c) Trisomy
 - (d) None of the above
- (ix) The variety of Groundnut developed by mutational breeding is.....
- (a) Sonora 64
 - (b) TAG-24
 - (c) Co-671
 - (d) Maldandi

(x) The new varieties of plants are produced by.....

- (a) Introduction
- (b) Hybridization
- (c) Acclimatization
- (d) None of the above

(Theory)

2. Describe supplementary gene action (9 : 3 : 4) with suitable example.

Or

- (i) Dihybrid cross
- (ii) Advantages of mutational breeding.

3. Describe polyploidy with reference to *Raphano brassica*.

Or

- (i) Turner's syndrome
- (ii) Objectives of plant breeding.

4. Describe process and application of mass selection.

Or

- (i) Pure line selection
- (ii) Heterosis.

This question paper contains 4 printed pages]

G—241—2015

FACULTY OF SCIENCE

B.Sc. (Second Semester) EXAMINATION

MARCH/APRIL, 2015

ZOOLOGY

Paper III

[Life and Diversity of Animals II]

(MCQ + Theory)

(Monday, 20-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :— (i) All questions are compulsory.

(ii) Draw well labelled diagrams.

(iii) All questions carry equal marks.

(MCQ)

1. Select the *correct* answer :

(1) is not a chordate character. 10

(a) Dorsal tubular nerve cord

(b) Notochord

(c) Diploblastic

(d) Pharyngeal gill slits

P.T.O.

- (2) In urochordata notochord is present in region.
- (a) Head
 - (b) Rostrum
 - (c) Abdomen
 - (d) Only in larval tail
- (3) Scoliodon is commonly called as
- (a) sea-fish
 - (b) dog-fish
 - (c) Humpy-fish
 - (d) All of the above
- (4) Scroll valve play an important role in
- (a) delay passage of food
 - (b) speed up the food
 - (c) mix the food with bile and digestive juices
 - (d) digest food quickly
- (5) Limbless amphibians are called as :
- (a) Apoda
 - (b) Urodela
 - (c) Anura
 - (d) All of the above

- (6) are flying vertebrates.
- (a) Reptiles
 - (b) Birds
 - (c) Protochordates
 - (d) None of the above
- (7) In mammalian classification humans are placed in
- (a) Primates
 - (b) Carnivora
 - (c) Chiroptera
 - (d) All of the above
- (8) Rat belong to
- (a) Amniota
 - (b) Anamniota
 - (c) Both (a) and (b)
 - (d) None of the above
- (9) Bones of birds are
- (a) Solid and light
 - (b) Solid and heavy
 - (c) Spongy and light
 - (d) Spongy and heavy

(10) Vertebrates without jaws are called

- (a) Gnathostoma
- (b) Agnatha
- (c) Euchordata
- (d) Cephalochordata

(Theory)

2. Explain in detail general characters of chordates. 10

Or

- (a) Metamorphosis
- (b) Characteristics of mammals.

3. Describe in detail digestive system of Scoliodon. 10

Or

- (a) Mechanism of respiration in Scoliodon.
- (b) Explain the structure of eye in Rat.

4. General characters of Amphibians. 10

Or

- (a) Importance of venum
- (b) Classification of mammals.

This question paper contains 4 printed pages]

G—245—2015

FACULTY OF SCIENCE

B.Sc. (Second Semester) EXAMINATION

MARCH/APRIL, 2015

ZOOLOGY

Paper IV

(Developmental Biology)

(MCQ + Theory)

(Tuesday, 21-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :— (i) Attempt All questions.

(ii) Use separate answer-sheet (OMR) for Question No. 1.

(iii) One mark to each correct answer of an MCQ.

(iv) Negative marking system is applicable.

(v) Use black ball point pen to darken the circle of correct choice in OMR answer-sheet.

(vi) Draw well labelled diagrams wherever necessary for Question Nos. 2, 3 and 4.

(MCQ)

1. Select the *correct* answer for each of the following MCQs : 10

(i) Gametogenesis involves :

(a) Multiplication, growth and maturation

(b) Multiplication, maturation and growth

(c) Growth, multiplication and maturation

(d) Maturation, multiplication and growth

P.T.O.

- (ii) The yolk material is uniformly distributed throughout the eggs is called :
- (a) Centrolecithal eggs
 - (b) Alecithal eggs
 - (c) Isolecithal eggs
 - (d) Telolecithal eggs
- (iii) Frog egg is :
- (a) Telolecithal
 - (b) Megalecithal
 - (c) Alecithal
 - (d) Microlecithal
- (iv) A small cavity develops among the blastomeres is called :
- (a) Gastrocoel
 - (b) Archenteron
 - (c) Haemocoel
 - (d) Blastocoel
- (v) A special kind of embryonic tissue which make connection between embryo and uterine wall is called :
- (a) Placenta
 - (b) Chick embryo
 - (c) Amnion
 - (d) Chorion

- (vi) In Giraffe with type of placenta is found :
- (a) Diffuse
 - (b) Intermediate
 - (c) Zonary
 - (d) Discoidal
- (vii) A child produce in a laboratory method is known as :
- (a) Natural baby
 - (b) Simase twins
 - (c) Test tube baby
 - (d) Cloning baby
- (viii) The first test tube baby was born to couple in India :
- (a) Prasanna and Nirupama
 - (b) Pramod and Nirmula
 - (c) Prakash and Niramala
 - (d) Prakash and Nirupama
- (ix) Regeneration in chordates is most common in :
- (a) Frog
 - (b) Man
 - (c) Rat
 - (d) Bat

(x) Parthenogenesis produced experimentally in laboratory is called :

- (a) Complete parthenogenesis
- (b) Incomplete parthenogenesis
- (c) Artificial parthenogenesis
- (d) All of the above

(Theory)

2. Describe the types of eggs. 10

Or

Write notes on :

- (a) Multiplication phase of Oogenesis
- (b) Artificial parthenogenesis.

3. Describe the process of Gastrulation. 10

Or

Write notes on :

- (a) Regeneration in non-chordates
- (b) Infertility in female.

4. Describe the structure and function of chorion and allantois in chick. 10

Or

Write notes on :

- (a) Zonary and Diffuse Placenta
- (b) Artificial Parthenogenesis.

This question paper contains 4 printed pages]

G—175—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

MICROBIOLOGY

Paper III

(Basic of Microbiology and Biomolecules)

(MCQ + Theory)

(Tuesday, 7-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—10+30=40

N.B. :— (i) Attempt All questions.

(ii) Attempt theory questions on answer-book.

(iii) Attempt MCQ on OMR answer-sheet separately.

(MCQ)

1. Multiple Choice Questions : Select the correct answer : 10

(i) HIV stands for

(a) Human Immunodeficiency Virus

(b) Human Immuno Virus

(c) Human Infective Virus

(d) None of the above

P.T.O.

- (ii) All cellular membrane have a lipid bilayer embedded with :
- (a) Protein
 - (b) Carbohydrates
 - (c) Nucleic acid
 - (d) Lipid
- (iii) A polysaccharide closely related in structure to glycogen is :
- (a) Cellulose
 - (b) Hemicellulose
 - (c) Amylopectin
 - (d) Dextran
- (iv) Which of the following rings of bacterial flagella has contact with plasma membrane ?
- (a) L-ring
 - (b) P-ring
 - (c) S-ring
 - (d) M-ring
- (v) Tumbling motion in bacteria is due to :
- (a) Clockwise rotation of flagella
 - (b) Counterclockwise rotation of flagella
 - (c) Zig-zag movement of flagella
 - (d) Undulating movement of flagella

- (vi) plasmid plays an important role in plant-microbe interaction.
- (a) Agrobacterium
 - (b) Cyanobacterium
 - (c) Coliform
 - (d) Rhizobium
- (vii) Ester linkages are found in :
- (a) Polysaccharides
 - (b) Lipids
 - (c) Nucleic acid
 - (d) Protein
- (viii) The reaction by which monomers are joined together to form a bipolymer is a reaction.
- (a) Oxidation
 - (b) Condensation
 - (c) Reduction
 - (d) Hydration
- (ix) Lactose is made up units.
- (a) Glucose-glucose
 - (b) Maltose-glucose
 - (c) Glucose-fructose
 - (d) Glucose-galactose

(x) Lipids with unsaturated fatty acid are generally at room temperature.

- (a) Liquid
- (b) Solid
- (c) Semi-solid
- (d) Amorphous

(Theory)

2. Describe in detail cell wall structure of Gram positive bacteria. 10

Or

Write notes on :

- (a) Structure of bacterial flagella 5
 - (b) Structure of plasma membrane. 5
3. Explain in detail lysogenic cycle of virus. 10

Or

Write notes on :

- (a) Glycosidic linkage 5
 - (b) Biological functions of lipid. 5
4. Give difference between DNA and RNA. 10

Or

Write notes on :

- (a) Significance of protein 5
- (b) t-RNA molecule. 5

This question paper contains 4+1 printed pages]

G—181—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

MICROBIOLOGY

Paper IV

(Microbial Physiology)

(MCQ + Theory)

(Wednesday, 8-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—10+30=40

N.B. :- (i) Attempt All questions.

(ii) All questions carry equal marks.

(iii) Draw well labelled diagrams wherever necessary.

(MCQ)

1. Multiple Choice Questions :

10

(i) The organisms using CO₂ as a sole source of carbon are called as

(a) Autotrophs

(b) Phototrophs

(c) Heterotrophs

(d) Chemotrophs

P.T.O.

(ii) Bacteria growing in presence of oxygen are termed as

- (a) Anaerobes
- (b) Aerobes
- (c) Facultative anaerobes
- (d) None of the above

(iii) The organisms not requiring growth factors are called as

- (a) Prototrophs
- (b) Autotrophs
- (c) Heterotrophs
- (d) Auxotrophs

(iv) In group translocation process the energy is provided by

- (a) ADP
- (b) ATP
- (c) PEP
- (d) GTP

- (v) The flow of the solute along the concentration gradient occurs in
- (a) Facilitated diffusion
 - (b) Group translocation
 - (c) Passive diffusion
 - (d) None of the above
- (vi) The rod shaped bacteria are called as
- (a) Cocci
 - (b) Bacilli
 - (c) Streptococci
 - (d) Staphylococci
- (vii) Breed method is used for measurement of bacterial growth by
- (a) Cell mass
 - (b) Cell activity
 - (c) Cell number
 - (d) None of the above

(viii) The microorganisms requiring optimum growth temperature between 20°C to 40°C are called as :

- (a) Psychrophiles
- (b) Mesophiles
- (c) Thermophiles
- (d) None of the above

(ix) gives heat resistance to bacterial endospores.

- (a) Ca-dipicolinate
- (b) Muramic acid
- (c) Teichoic acid
- (d) Acetic acid

(x) Sporulation in clostridia takes place under conditions.

- (a) Aerobic
- (b) Strictly anaerobic
- (c) Microaerophilic
- (d) All of the above

(Theory)

2. Describe in detail nutritional requirement of microorganisms. 10

Or

Write notes on :

- (a) Effect of pH on microbial growth 5
- (b) Bacterial reproduction. 5
3. Take a detailed account of Active transport mechanism. 10

Or

Describe in brief :

- (a) Growth yield 5
- (b) Synchronous culture. 5
4. Define endospore. Describe in detail the structure of endospore. 10

Or

Write notes on :

- (a) Arithmetic culture 5
- (b) Role of nutrients in microbial nutrition. 5

This question paper contains 4+2 printed pages]

A—342—2015

FACULTY OF ARTS

B.A. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

HINDI (Optional)

Paper IV

(नाटक तथा एकांकी)

(MCQ and Theory)

(Thursday, 16-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :- (i) सभी प्रश्न अनिवार्य हैं।

(ii) बहुपर्यायी प्रश्नों (MCQs) के लिए नकारात्मक अंकदान है।

(iii) थ्योरी (Theory) प्रश्नों के आगे अंक दिए गए हैं।

(MCQ)

1. निम्नलिखित बहुपर्यायी प्रश्नों (MCQs) के सही उत्तर दीजिए। 10

(i) एकांकी डॉ. बाबासाहेब अम्बेडकरजी के ऐतिहासिक महाड सत्याग्रह को लेकर लिखी गयी है।

(A) वारिस

(B) दहाड़ उठा था सिंह

(C) गुनाहों की सजा

(D) परिचय

P.T.O.

(ii) 'नाट्यशास्त्र' के रचनाकार कौन हैं ?

(A) आ. भरतमुनि

(B) आ. वामन

(C) आ. भामह

(D) आ. विश्वनाथ

(iii) कुसुम कुमार के पिता किस व्यवसाय से जुड़े हुए थे ?

(A) अध्यापन

(B) व्यापार

(C) खेती

(D) भवन निर्माण

(iv) कर्मशील भारती का जन्म कब हुआ था ?

(A) 7 मार्च, 1955

(B) 5 मार्च, 1955

(C) 2 मार्च, 1955

(D) 9 मार्च, 1955

- (v) नाटक को अंग्रेजी में क्या कहा जाता है ?
- (A) नाव्हेल
(B) पोयम
(C) ड्रामा
(D) उपर्युक्त में से कोई नहीं
- (vi) गेरू घाट पर नित्य अपने बाबा के साथ किस काम में सहायता करने आता है ?
- (A) पूजा में
(B) पोथी पढ़ने में
(C) कीर्तन में
(D) व्याख्यान में
- (vii) 'समर्पित जीवन' एकांकी में की त्रासदी को प्रस्तुत किया गया है।
- (A) आदर्शवादी नेता
(B) आदर्शवादी शिक्षक
(C) आदर्शवादी वकील
(D) उपर्युक्त में से कोई नहीं

(viii) अशोक कुमार के पिता का नाम क्या है ?

- (A) श्री किशन सिंह
- (B) श्री मिशन सिंह
- (C) श्री मंगल सिंह
- (D) श्री बिशन सिंह

(ix) बकुल शेफाली को प्यार से क्या कहता है ?

- (A) मीली
- (B) आली
- (C) बाली
- (D) डाली

(x) हरपाल की पत्नी अरुणा की उम्र कितनी है ?

- (A) 30 वर्ष
- (B) 26 वर्ष
- (C) 27 वर्ष
- (D) 25 वर्ष

(Theory)

2. संसदभ व्याख्या कीजिए : 5

“तो समझ लो कि वह ‘समाजसेवा’ के बाप हैं! समाजसेवा का यज्ञ पूरा कर चुके हैं, अब राजनीति के महायज्ञ में शामिल होने वाले हैं समझ लो कि अब वे बाप से दादा बनने वाले हैं।

अथवा

“आज हम यह दस माँगों वाला प्रस्ताव जारी करते हैं, और अब हमारे इन प्रस्तावों का क्रियान्वयन का समय आ गया है। आज हम उस चावदार तालाब का पानी पियेंगे जिसका पानी धर्मी-अधर्मी, पशु-पक्षी सभी पी सकते हैं, केवल हम नहीं।”

3. ‘सुनो शोफाली’ नाटक की कथावस्तु को समझाइए। 10

Or

‘सुनो शोफाली’ नाटक में आत्मसन्मानी शोफाली का व्यवस्था में व्याप्त शोषण के कुचक्र को अभिव्यक्त किया है। स्पष्ट कीजिए।

4. 'गुनाहों की सजा' एकांकी में सम्राट मौर्य वंशज सम्राट देववर्मा के माध्यम से न्याय व्यवस्था को प्रस्तुत किया गया है। एकांकी के आधार पर समझाइए। 10

अथवा

'वारिस' एकांकी की मूल संवेदना स्पष्ट कीजिए।

5. टिप्पणी लिखिए :

5

भारतेन्दुयुगीन हिंदी नाटक।

अथवा

नाटक विधा का अभिनय तत्व।

This question paper contains 4+2 printed pages]

A—290—2015

FACULTY OF ARTS/COMMERCE/SCIENCE

B.A./B.Com./B.Sc. (Second Semester) EXAMINATION

MARCH/APRIL, 2015

ENGLISH

(Compulsory)

(MCQ + Theory)

(Friday, 10-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—40

N.B. :— (i) All questions are compulsory.

(ii) Figures to the right indicate full marks.

(MCQ)

1. Answer the following questions choosing from the options that follow : 10

(i) What is meant by 'Time's fool' in Sonnet 116' ?

(a) Time's passage has no effect on love

(b) Time is a fool

(c) Love is a fool because it changes with time

(d) Time can fool anyone but no one can fool time

P.T.O.

(ii) 'Cruel eye' refers to :

- (a) Eyes of his parent
- (b) Eyes of the huntsman
- (c) Look of the imposing teacher
- (d) Look of his classmates;

(iii) According to Wordsworth, Nature had a.....

- (a) Spiritual and ennobling power
- (b) Destructive power
- (c) Secret power
- (d) Graceful power

(iv) To whom does Maya Angelou refer as 'you' in the poem 'Still I Rise' ?

- (a) Oppressors who have troubled the speaker
- (b) Black people
- (c) Slaves
- (d) None of the above

(v) Alfred Tennyson belongs to.....age.

(a) Elizabethan

(b) Victorian

(c) Augustan

(d) None of the above

(vi) The theme of the poem 'My Grandmother' is :

(a) Loneliness

(b) Guilt

(c) The passing of time

(d) All of the above

(vii)received Nobel Prize in 1913.

(a) Rabindranath Tagore

(b) R.K. Narayan

(c) Emily Dickinson

(d) Maya Angelou

(viii) Chinua Achebe was a.....novelist and poet.

- (a) Indian
- (b) English
- (c) Nigerian
- (d) Irish

(ix) To whom does Tagore refer 'Father' in his poem 'Where the Mind is Without Fear' ?

- (a) His own father
- (b) God
- (c) Teacher
- (d) None of the above

(x) Who wrote the poem 'My Grandmother' ?

- (a) Elizabeth Jennings
- (b) Maya Angelou
- (c) Rabindranath Tagore
- (d) Alfred Tennyson

(Theory)

2. Explain with the reference to the context any *one* of the following : 4

(i) All things were born.

Ye will come never more,

For all things must die.

(ii) Where the world has not been broken up into fragments

By narrow domestic walls.

3. Oh, no. It is an everfixed mark. Elucidate the statement with reference to Sonnet 116. 8

Or

What is the central theme of "All Things Will Die" ?

4. Write short answers to the following questions (any *two*) : 8

(i) What does Rabindranath Tagore mean by 'narrow domestic walls' ?

P.T.O.

(ii) What is the theme of the poem "Still I Rise" ?

(iii) What is the message given in the poem "The School Boy" ?

5. Write short notes on any *two* of the following : 10

(i) Writing Process;

(ii) Barriers to Listening;

(iii) Importance of Postures and Gestures.

This question paper contains 4 printed pages]

A—282—2015

FACULTIES OF ARTS/COMMERCE/SCIENCE

B.A./B.Com./B.Sc. (Second Semester) EXAMINATION

MARCH/APRIL, 2015

MARATHI (Second Language)

(साहित्यगाथा, भाग-2)

(MCQ + Theory)

(Thursday, 9-4-2015)

Time : 2.00 p.m. to 4.30 p.m.

Time—2½ Hours

Maximum Marks—10+30=40

N.B. :- (i) सर्व प्रश्न सोडविणे अनिवार्य आहे.

(ii) सर्व प्रश्नांना समान गुण आहेत.

(MCQ)

1. खालील वस्तुनिष्ठ प्रश्न सोडवा :

10

(1) एका खणास आगी लागली म्हणजे सारे जळोन जातील.

(A) रान

(B) वन

(C) खण

(D) गाव

P.T.O.

- (2) डॉ. बाबासाहेब आंबेडकरांनी खालीलपैकी कोणते पत्र चालविले :
- (1) जनता
(2) मूकनायक
(3) काळ
(4) सुधारक
(A) (1) व (2) बरोबर
(B) (3) व (4) बरोबर
(C) (1) व (3) बरोबर
(D) (2) व (4) बरोबर
- (3) दुर्गा भागवत यांनी येथे भरलेल्या 51व्या अ.भा. मराठी साहित्य संमेलनाचे अध्यक्षस्थान भूषविले.
- (A) सासवड
(B) कराड
(C) ठाणे
(D) चिपळूण
- (4) 'माझ्या बापाची पेंड' कथेतील नायकाच्या वडिलांना पोलिसांनी पकडून नेले. कारण :
- (A) वडिलांनी दारू पिली होती
(B) वडिलांनी पेंड खाल्ली होती
(C) वडील बेकायदा पेंड विकत होते
(D) वरीलपैकी नाही
- (5) डॉ. पंजाबराव देशमुख यांनी पी-एच.डी. मिळविलेली आहे.
- (A) धर्मावर
(B) शेतीवर
(C) विज्ञानावर
(D) वेदांतावर

- (6) 'नामा म्हणे तैसा जातीचा मी ।
उपमा जातीची देऊ नये ॥'
- (A) शिंपी
(B) माळी
(C) न्हावी
(D) कुणबी
- (7) 'जोतिबाचा बोध' या कवितेतील 'आवडीचा देव' म्हणजे
होत.
- (A) गौतम बुद्ध
(B) संत कबीर
(C) महात्मा फुले
(D) महात्मा गांधी
- (8) खालीलपैकी कोणत्या कवीने मराठी नाटक व चित्रपटातून भूमिका केल्या
आहेत ?
- (A) आनंद यादव
(B) सौमित्र
(C) फ.म. शाहीजिंदे
(D) मधुकर केचे
- (9) कार्यक्रमाची पूर्वतयारी करण्यासाठी खालीलपैकी कोणत्या बाबीची
आवश्यकता नाही ?
- (A) कार्यक्रमनिश्चिती
(B) प्रमुख पाहुण्यांना आमंत्रण
(C) कार्यक्रमाची तारीख व वेळ
(D) सभाधीटपणा

(10) कार्यक्रमाला सुरुवात करून शिस्तीत पुढे घेऊन जाणाऱ्याला
म्हणतात.

- (A) सूत्रसंचालक
- (B) वक्ता
- (C) संयोजक
- (D) श्रोता

(Theory)

2. खालीलपैकी कोणताही एक प्रश्न सोडवा : 10
- (i) महाराजा सयाजीराव गायकवाड यांनी मुलींच्या शिक्षणासाठी केलेल्या उल्लेखनीय कार्याची महती 'सांजवात' मधून कशी व्यक्त होते, ते लिहा.
 - (ii) महानगरीय जीवनातील मध्यमवर्गीय माणसांच्या अधःपतनाचा वेध 'टेंगशेंच्या स्वप्नात ट्रेन' मधून जयंत पवार यांनी कसा घेतला आहे.
3. खालीलपैकी कोणताही एक प्रश्न सोडवा : 10
- (i) कान्होपात्राच्या अभंगातून विठ्ठलभक्तीच्या उत्कट अनुभूतीचा अविष्कार कसा झाला आहे ? विशद करा.
 - (ii) शिक्षण घेऊनही आईची मनोकामना पूर्ण करू शकत नसल्याची खंत 'मायलेकरं' या कवितेतून कशी व्यक्त झाली आहे ?
4. खालीलपैकी कोणताही एक प्रश्न सोडवा : 10
- (i) औपचारिक पत्राचे स्वरूप थोडक्यात स्पष्ट करून दुष्काळामुळे महाविद्यालयीन फी माफ करण्यात यावी, असा अर्ज प्राचार्यांना लिहा.
 - (ii) इतिवृत्त म्हणजे काय ते सांगून इतिवृत्ताचे प्रकार थोडक्यात सांगा.

This question paper contains 4 printed pages]

AO—3—2015

FACULTY OF SCIENCE

B.Sc. (F.T.) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

ENGLISH

(Communication Skills—II)

(Thursday, 9-4-2015)

Time : 10.00 a.m. to 12.00 noon

Time—Two Hours

Maximum Marks—40

N.B. :— (i) All questions are compulsory.

(ii) Figures to the right indicate full marks.

1. Attempt the following questions : 10

(i) Give the synonyms of the following :

(a) False

(b) Active

P.T.O.

(ii) Give the antonyms of the following :

(a) Belief

(b) Full

(iii) Do as directed :

(a) He sang a song.

(Change into simple present tense)

(b) What did a 'red rose' symbolize ?

(Change into simple present tense)

(iv) Do as directed :

(a) Lata painted the door.

(Change the voice)

(b) How did they make butter ?

(Change the voice)

(v) Do as directed :

(a) She is beautiful.

(Change into exclamatory sentence)

(b) Why did he attend the meeting ?

(Change into a statement)

2. Attempt any *two* of the following : 10

(a) What message does the poem, 'Abou Ben Adhem' give to the readers ?

(b) What do you understand by the reading of the poem, 'Stay Calm' ?

(c) The poet wants to keep away children from television. Do you agree ? Give reasons.

3. Attempt any *one* of the following : 10

(a) How can a teacher influence the village ?

(b) How does Nehru describe the part of India ?

This question paper contains 4 printed pages]

L—7—2015

FACULTY OF SCIENCE

B.C.A. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

COMMUNICATION SKILLS IN ENGLISH—II

(Thursday, 9-4-2015)

Time : 10.00 a.m. to 1.00 p.m.

Time—Three Hours

Maximum Marks—80

N.B. :— (i) All questions are compulsory.

(ii) Attempt either (A) or (B) from Q. No. 3 and Q. No. 4.

(iii) Figures to the right indicate full marks.

(iv) Use diagrams if necessary.

1. Write short notes on the following : 20

(a) Word classes

(b) Morphemes

(c) Phrases

(d) Clauses.

P.T.O.

2. Do as directed :

15

(a) Change the voice of the following sentences :

- (1) Close the window.
- (2) Somebody has stolen my car.
- (3) When do you complete your project ?
- (4) Is he learning French ?
- (5) I speak English.

(b) Change the narration of the following sentences :

- (1) "Has your brother gone to Mumbai ?" Raj said to Lata.
- (2) The boss said, "I am not feeling well".
- (3) The teacher said to the student, "When will you attend the practicals ?"
- (4) The student said to the director, "Give me the T.C."
- (5) He said to her, "It was raining heavily last night".

(c) Correct the following sentences :

- (1) I am having my breakfast.
- (2) Does they cooks Pizza ?
- (3) One of the cat are climbing the tree.
- (4) A Tabla is a fine musical instrument.
- (5) If you study hard, you would pass.

3. (A) Attempt the following :

- (a) You have received a consignment of 150 computer sets. Some of the computer sets have been damaged and dented. Being the Principal of the college, write a letter of complaint to HP Pvt. Ltd., Juhu Road, Mumbai-400003. 8
- (b) Write a curriculum Vitae of an imaginary candidate who is applying for the post of manager. 7

Or

(B) Attempt the following :

- (c) Write a letter to your freind telling him about your preparation for U.P.S.C. Exam.
- (d) Write a journalistic report on a bus accident you have witnessed.

4. (A) Attempt the following :

- (a) Differentiate between Seminar and Conference. 8
- (b) Discuss the interpersonal skills and negotiation skills in detail. 7

P.T.O.

Or

(B) Attempt the following :

(c) Write a note on Meeting in detail.

(d) Write a note on group discussion in detail.

5. Analyse any *three* of the following words mentioning word classes with changing or maintaining suffixes or prefixes (Use tree diagram) : 15

(a) Uncareless

(b) Enjoyable

(c) Antigovernment

(d) Newspaper boys.

This question paper contains 4 printed pages]

M—10—2015

FACULTY OF COMPUTER STUDIES

B.Sc. (C.S.) (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

FUNDAMENTAL OF STATISTICS AND DISCRETE MATHEMATICS

(Friday, 10-4-2015)

Time : 10.00 a.m. to 1.00 p.m.

Time—Three Hours

Maximum Marks—80

N.B. :- (i) All questions are compulsory.

(ii) Figures to the right indicate full marks.

(iii) Attempt either (A) or (B) from Q. Nos. 2 to 4.

(iv) Use of non-programmable calculator is allowed.

(v) Use suitable data if necessary.

1. Attempt the following :

20

(a) Explain the scope of statistics.

(b) Write merits and demerits of median

(c) Explain subsets.

(d) Explain partial ordering relation.

P.T.O.

2. (A) Attempt the following :

- (a) Explain permutation and combination. 7
(b) Calculate median from the following data : 8

Wages	No. of Workers
100—150	12
150—200	16
200—250	24
250—300	20
300—350	15
350—400	10
400—450	8
450—500	3

Or

(B) Attempt the following :

- (c) Explain frequency curve. 7
(d) Calculate mean deviation from the following data : 8

Marks	No. of Student
0—10	3
10—20	8
20—30	13
30—40	18
40—50	14
50—60	11
60—70	9
70—80	7

3. (A) Attempt the following :

- (a) Explain diagrammatic presentation of the data. 7
- (b) Calculate the probability of picking a card that was heart or spade. 8

Or

(B) Attempt the following :

- (c) Define function and explain its type. 7
- (d) A given connected graph G is an Euler if and only if all vertices of G are of even degree. 8

4. (A) Attempt the following :

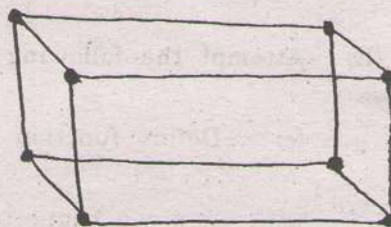
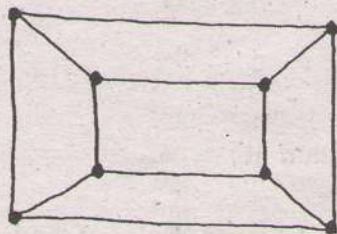
- (a) Explain types of graphs. 7
- (b) If $A = \{a, e, i, o, u\}$; $B = \{a, c, d, e, g, h, s, t, u, x, z\}$; $C = \{b, f, g, u, v\}$ and $U = \{a, b, c, \dots, x, y, z\}$ then find : 8
- (i) $A \cup C$
- (ii) $(A \cap B) \cup C$
- (iii) $C - A$
- (iv) $A \cap B'$

Or

(B) Attempt the following :

(c) Explain edge and vertex connectivity. 7

(d) Are the following two graphs isomorphic ? Why ? 8

5. Write short notes on any *three* of the following :

15

(a) Measures of dispersion

(b) Probability

(c) Classification of data

(d) Paths and circuits

(e) Connected and disconnected graphs.

This question paper contains 8 printed pages]

M—2—2015

FACULTY OF SCIENCE

B.C.S./B.Sc. (C.S.) (Second Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

ENGLISH

Paper II

(Communication Skills)

(Wednesday, 8-4-2015)

Time : 10.00 a.m. to 1.00 p.m.

Time—Three Hours

Maximum Marks—80

N.B. :— (i) All questions are compulsory.

(ii) All questions carry equal marks.

(iii) Figures to the right indicate full marks.

1. Read the following passage and answer the questions given below :

16

Research on solar energy is as sophisticated and intensive in India as anywhere else in the world. For ten months of the year, six to eight hours a day, much of India receives high intensity, fairly uniform

P.T.O.

sunshine. The Indian Government has therefore given priority to six projects in the development of solar energy. The most important of these is the solar-energised water-pump. The other five are solar power stations, solar distillation and desalination plants, solar air conditioning units, solar water heaters and solar agricultural dryers.

The solar water pump; which will have a capacity of between two and five horse-power, is being developed principally for use in rural areas.

A solar-energised pump would have no recurring expenses, and should last more than ten years. When compared to the cost of conventional generation of electricity and its transmission to remote villages, a water pump may become economically feasible for many parts of the country.

The solar power station project hopes to develop a minipower unit that can be used in rural India to collect solar energy and transform it into electrical energy for lights, fans, TV sets and small scale machinery.

Research on solar desalination plants has been confined to the laboratory so far, but the Central Salt and Marine Chemicals Research Institute, Bhavanagar, has produced a successful prototype. Experts feel that solar

energy is ideally suited to convert brackish water into drinking water, thus benefitting countless villages.

Research over the last 15 years has produced three major designs for solar water heaters with capacities from 140 to 200 litres. Agricultural industries stand to gain substantially from the development of a solar dryer. Agricultural produce — rice, wheat, corn, chillies, dry fruits — can then be hygienically and uniformly dried. Many research centres such as the Forest Research Institute, Dehradun have already produced prototype solar dryers.

It is too early to estimate the effect solar energy will have on India's total energy requirements. However, the solar energy programme is forging ahead with support from the government, industry and private institutions.

Questions :

- (i) What is the passage about ?
- (ii) What is the greatest disadvantage in the use of machines powered by the solar energy at present ?
- (iii) Which parts of India will benefit most if solar energy can be developed ? Why ?

(iv) Which of the six priority projects seems the least important in view of the climate in India ?

(v) Complete the following :

Bhavanagar prototype

Dehradun prototype

(vi) Explain, how solar energy will help life in the villages.

(vii) Suggest a suitable title for the passage.

(viii) Complete the following :

Experts feel that solar energy is ideally suited to convert

2. Do as directed :

(A) Punctuate the following :

4

(i) raj said where is my book

(ii) he said i like delhi very much

(B) Correct the following sentences :

4

(i) There are no woman teachers in our college.

(ii) I am Nineteen years.

(C) Give synonyms :

2

(i) Zeal

(ii) Profit.

- (D) Give antonyms : 2
- (i) Deficit
- (ii) Aristocracy.
- (E) Give *one* word substitution for the following : 4
- (i) Widely known for bad things.
- (ii) An unmarried boy.
3. (A) Write a letter to your sister telling her about the problems you are facing in your hostel. 8

Or

Place an order for 50 desktop systems to HCL Infosystems, Pune for your institute. Write a letter of order.

- (B) Rearrange the following jumbled sentences to make a meaningful paragraph : 8
- (i) Hugo ran out of the house, jumped on his horse and set off after the girl.
- (ii) The girl escaped from the room by climbing down the ivy.
- (iii) Hugo fell in love with a neighbouring landowner's daughter.

P.T.O.

- (iv) On reaching the ground she started towards her home across the moor.
- (v) He found the room empty.
- (vi) They locked her up in a room upstairs.
- (vii) But the girl avoided him as she had heard of his bad reputation.
- (viii) A little later Hugo went upstairs taking some food and drink for the girl.
- (ix) One day Hugo and some of his friends went to the farm and carried her away.
- (x) Hugo and his friends then sat and drank downstairs in their usual fashion.

Or

Prepare a newspaper advertisement of a newly launched Laptop by Dell with the help of picture/diagram.

4. (A) Imagine that you are a journalist. You have witnessed a cricket match being played between India and Pakistan in the World Cup-2015. Prepare a newspaper report. 8

Or

Prepare a curriculum vitae of an imaginary candidate for the post of Programmer.

- (B) Make a note on the following paragraph and suggest a suitable title : 8

Though medicines has advanced by leaps and bounds, the poor villagers are not educated to distinguish between the genuine and fake medicines, letting doctors, both government and private, force them to buy fake medicines and earn huge amounts in the bargain. Cases of doctors duping the patients in this manner has come to light in Armur, Bhimgal, Balkonda, Nizamabad and Kamareddy. The doctors in collusion with certain medical shop-owners precribe cheap quality medicines to the patients and insist that they buy from specified shops. Medicinal shops are run in clinic compound, forcing patients to buy medicines there. The doctors even get additional returns like letter pads, in the form of gifts, from these shops. Drug inspectors are allegedly involved as they are rarely seen checking these shops.

Or

Draft a memo to the clerk in the bank who misbehaved with customers.

P.T.O.

5. (A) Write short notes on any *four* of the following :

- (i) Suffixes in English
- (ii) Adjective Phrase
- (iii) Closed Word Classes
- (iv) Complex Sentence
- (v) Morpheme.

Or

(B) Analyse the following words (Use Tree Diagram) :

- (i) Representation
- (ii) Empowerment
- (iii) Adventurous
- (iv) Unacceptable.