Total No. of Questions : 4]

SEAT No. :

P970

[Total No. of Pages : 2

[5017]-1001
S.Y.B.Sc.
MATHEMATICS
MT - 211: Multivariable Calculus - I
(2013 Pattern) (Semester - I) (Paper - I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are Compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any Five of the following. **[10]**

a) If $f(x,y,z)=\sin^{-1}(xyz)$, find $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$.

b) What are the domain and range of the function $f(x,y)=\frac{xy}{x^2-y^2}$.

c) Define continuity of function of two variables at a point (x_0,y_0).

d) If $w=xy$ and $x=\cos t,\ y=\sin t$, find $\frac{dw}{dt}$ at $t=\pi/2$

e) Find critical points of the function $f(x,y)=x^3+y^3-12x-3y+5$.

f) State sufficient condition for differentiability of a function of two variables.

g) If $x=r\cos\theta,\ y=r\sin\theta,\ z=z$, find Jacobian $J=\frac{\partial(x,y,z)}{\partial(r,\theta,z)}$

Q2) Attempt any Two of the following: **[10]**

a) Suppose *f(x,y)* is real valued function defined on a neighbourhood of point (x_0,y_0). If *f(x,y)* is differentiable at point (x_0,y_0) then prove that

i) $f_x(x_0,y_0)$ and $f_y(x_0,y_0)$ both exist,

ii) $f(x,y)$ is continuous at (x_0,y_0).

P.T.O.

b) Show that $\lim_{(x,y)\to(0,0)} \frac{x^3 - xy^2}{x^2 + y^2} = 0$

c) If $w=f(u,v)$ is a differentiable function of two variables u and v. $u=\phi(x,y)$, $v = \psi(x,y)$ are differentiable function of x and y then prove that the composite function $w = f(\phi(x,y), \psi(x,y))$ is also differentiable and $\frac{\partial w}{\partial x} = \frac{\partial w}{\partial u}.\frac{\partial u}{\partial x} + \frac{\partial w}{\partial v}.\frac{\partial v}{\partial x}$.

Q3) Attempt any two of the following: **[10]**

a) Find extreme values of the function $f(x,y) = 3x^2(y-1) + y^2(y-3) + 1$.

b) Find the directional derivative of the function $f(x,y) = xe^y + \cos(xy)$ at the point (2,0) in the direction of $3i - 4j$.

c) Expand the polynomial function $f(x,y) = x^2y + 3y - 2$ in power of $(x-1)$ and $(y+2)$.

Q4) Attempt any One of the following: **[10]**

a) i) Evaluate $\int_0^1 \int_0^{1-y^2} 8x\,dx\,dy$.

ii) Evaluate $\iint_R e^{x^2+y^2}\,dx\,dy$, where R is semicircular region bounded by x-axis and the curve $y = \sqrt{1-x^2}$.

b) i) Evaluate $\int_0^1 \int_0^{3-3x} \int_0^{3-3x-y} dz\,dy\,dx$.

ii) Change the order of integration in $\int_0^{2a} \int_0^{\sqrt{2ax-x^2}} f(x,y)\,dy\,dx$.

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Total No. of Questions : 4]

SEAT No. :

P971

[Total No. of Pages : 4

[5017]-1002
S.Y. B.Sc.
MATHEMATICS
MT-212 (A) : Discrete Mathematics
(2013 Pattern) (Paper-II (A)) (Semester-I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt Any Five of the following: **[10]**

a) State principle of duality. Write dual of $(p \vee \mathrm{T}) \wedge (q \vee \mathrm{F})$.

b) Write 'All good students study hard' in symbolic form.

c) Determine the truth set of '$\exists x,\ x^2 - 5x + 6 < 0$' if the domain of discourse is $\mathbb{R}$.

d) How many numbers are there between 100 and 1000 in which all the digits are distinct.

e) Write Inclusion-Exclusion principle for four sets.

f) Find the number of permutations of the letters in the word 'BENZENE'.

g) How many committees of 6 with a given chairperson can be selected from 11 persons?

Q2) Attempt Any Two of the following: **[10]**

a) Determine whether $[P \wedge (p \rightarrow q)] \rightarrow q$ is tautology.

b) How many ways are there to select 10 balls from 20 red, 15 blue and 12 green balls so that at least 4 red balls are selected.

c) How many 7-digit numbers can be formed using the digits 1, 2, 5, 2, 4, 2 and 4.

P.T.O.

Q3) Attempt Any Two of the following: **[10]**

a) Test the validity of the following argument. The book is readable iff the print is clear. Either the print is clear or printer is bad. The printer is not bad. Hence the book is not readable.

b) In how many different orders can 10 examination papers be set so that no two of the three mathematical papers are consecutive.

c) If n is an integer and $3n + 2$ is even then prove that n is even by using proof by contrapositive.

Q4) Attempt Any One of the following: **[10]**

a) i) If $S_1, S_2, \ldots\ldots S_n$ are pairwise disjoint sets then prove that

$$|S_1 \cup S_2 \cup \cdots\cdots \cup S_n| = |S_1| + |S_2| + \cdots\cdots + |S_n|.$$

ii) In a group of 200 students, 80 are taking Mathematics, 60 are taking chemistry and 30 are taking both subjects. How many students are taking either Mathematics or chemistry. How many students are taking neither subjects?

b) How many 8-digit sequences have exactly 6 different digits.

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Total No. of Questions :4]

P971

[5017]-1002
S.Y. B.Sc.
MATHEMATICS
MT-212 (B): Laplace Transforms and Fourier Series
(2013 Pattern) (Paper-II (B)) (Semester-I)

Time : 2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt Any Five of the following: **[10]**

a) Find $\mathrm{L}\{3e^{4t} + 6t^2 - 4\sin 3t\}$.

b) Find $\mathrm{L}\{\cos 3t\ \delta(t-1)\}$; where $\delta(t-1)$ is dirac delta function.

c) Find $\mathrm{L}\{t^2 e^{3t}\}$.

d) Find $\mathrm{L}^{-1}\left\{\dfrac{s+1}{s^2+2s+2}\right\}$.

e) Find $\left\lceil\dfrac{5}{2}\right.$.

f) Find $\mathrm{L}^{-1}\left\{\dfrac{e^{-\pi s}}{s+3}\right\}$.

g) Solve (D + 1)y = 0, given that $y(0) = y_0$ when t = 0 using Laplace Transforms.

Q2) Attempt Any Two of the following: **[10]**

a) If $f(t), f'(t), f''(t), \cdots, f^{(n-1)}(t)$ are continuous functions for all $t \geq 0$ and of exponential order as $t \to \infty$ and $f^{(n)}(t)$ is sectionally continuous for all $t \geq 0$ then $\mathrm{L}\{f^{(n)}(t)\}$ exist and prove that

$$\mathrm{L}^{-1}\{f^{(n)}(t)\} = s^n\ \mathrm{L}\{f(t)\} - s^{(n-1)} f(0) - s^{(n-2)} f'(0) \cdots f^{(n-1)}(0).$$

b) If $L^{-1}\{\phi(s)\} = f(t)$ then prove that $L^{-1}\left\{\int_0^{\infty}\phi(s)ds\right\} = \frac{f(t)}{t}$.

c) Evaluate $\int_0^{\infty} t^2 e^{-3t}\sinh t\, dt$.

Q3) Attempt Any Two of the following: **[10]**

a) Find $L\{f(t)\}$; where

$$f(t) = \begin{cases} \cos\left(t - \frac{\pi}{3}\right), t > \frac{\pi}{3} \\ 0 \quad , t < \frac{\pi}{3} \end{cases}$$

b) Find $L^{-1}\left\{\frac{s^2 - a^2}{(s^2 + a^2)^2}\right\}$.

c) Solve the differential equation $y'' + y = t$ with $y(0) = 1,\ y'(0) = -2$ using Laplace Transforms.

Q4) Attempt Any One of the following: **[10]**

a) Define Fourier series and find it for the function

$$f(x) = \begin{cases} \pi x & \text{if } 0 \le x \le 1 \\ \pi(2 - x) & \text{if } 1 \le x \le 2 \end{cases} \quad \text{with period 2}$$

b) i) By using convolution theorem, find

$$L^{-1}\left\{\frac{1}{s^2(s+1)^2}\right\}$$

ii) If $L^{-1}\{\phi(s)\} = f(t)$ then prove that $L^{-1}\left\{\frac{\phi(s)}{s}\right\} = \int_0^t f(u)du$

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Total No. of Questions :4]

SEAT No. :

P972

[Total No. of Pages :2

[5017]-1003
S.Y.B.Sc.
PHYSICS
PH -211: Mathematical Methods in Physics - I
(2013 Pattern) (New Pattern) (Paper - I) (Semester - I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and logarithmic table is allowed.***
4) ***Draw neat labelled diagrams wherever necessary.***

Q1) Attempt all of the following: **[10]**

a) State De-Moivre's theorem.

b) Explain with example order and degree of differential equation.

c) If $z = 1 + \sqrt{3i}$, determine | z |.

d) Prove that $\vec{A} = 4\vec{i} - 3\vec{j} + 2\vec{k}$ and $\vec{B} = 3\vec{i} + 2\vec{j} - 3\vec{k}$ are perpendicular to each other.

e) Show that $\sinh(i\theta) = i\sin\theta$.

f) If $\vec{V} = y^2 z\vec{i} + xz\vec{j} + 3z\vec{k}$, find $\nabla \cdot \vec{V}$.

g) Express the complex number πi into the polar and exponential form.

h) If PV = RT, determine $\left(\frac{\partial P}{\partial T}\right)_V$ and $\left(\frac{\partial V}{\partial T}\right)_P$.

i) What do you mean by linear differential equation.

j) If $F = x^3 + xy - y^3$, find Fx.

P.T.O.

Q2) Attempt any <u>two</u> of the following: **[10]**

a) Using the method of differential equation, find the approximate value of $\left[\sqrt{(2.99)^2 + (3.99)^2}\right]$.

b) Obtain the quadratic equaion in z, whose roots are $(1 + i)$ and $(1 - i)$.

c) Show that $\vec{\nabla} \times \vec{\nabla}\phi = 0$.

Q3) Attempt any <u>two</u> of the following: **[10]**

a) Find the percentage error in the area of ellipse when an error of 1% is made in measuring its major and minor axes.

b) Show that $\vec{F} = \cos y\vec{i} - x\sin y\vec{j} - \cos z\vec{k}$ is conservative field.

c) Show that the point $x = 0$ is regular singular point of Bessel differential equation $x^2y'' + xy' + (x^2 - n^2)y = 0$.

Q4) A) Attempt any (<u>a</u>) or (<u>b</u>) of the following: **[8]**

a) i) Show that the equation

$$dF = (y^2 - y + 2xy)dx + (x^2 - x + 2xy)dy$$

ii) Prove that $\vec{A} = 3y^4z^2\vec{i} + 4x^2z^2\vec{j} - 3x^2y^2\vec{k}$ is solenoidal.

b) i) Determine the value of $(1 + i)^8$.

ii) If $\vec{a}, \vec{b}, \vec{c}$ be three vectors, such that $\vec{a} + \vec{b} + \vec{c} = 0$. Prove that $\vec{a} \times \vec{b} = \vec{b} \times \vec{c} = \vec{c} \times \vec{a}$.

B) Attempt any <u>one</u> of the following: **[2]**

a) Prove that the vectors $\vec{A} = \vec{i} + 3\vec{j} + \vec{k}$ and $\vec{B} = 2\vec{i} + 6\vec{j} + 2\vec{k}$ are parallel to each other.

b) Show that $\cos(\theta + \theta\pi n) = \cos\theta$, where n is an integer by using Euler's formula.

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Total No. of Questions :4]

SEAT No. :

P973

[Total No. of Pages :5

[5017]-1004
S.Y.B.Sc.
PHYSICS
PH-212 (A): Electronics -I
(2013 Pattern) (Paper -II)(Semester - I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***
4) ***Use of log tables and calculators is allowed.***

Q1) Attempt all of the following:

a) State superposition theorem. **[1]**

b) Define ideal voltage source. **[1]**

c) A change of 300 mV in base - emitter voltage causes change of 120 μA in the base current. Find the input resistance of transistor. **[1]**

d) State two applications of transistor. **[1]**

e) Draw circuit diagram of inverting Op-Amp. **[1]**

f) Define input off-set voltage of Op-Amp. **[1]**

g) State any two advantages of negative feedback. **[1]**

h) State two drawbacks of Full-wave Rectifier. **[1]**

i) What is meant by 2's complement of binary number. **[1]**

j) Convert binary number $(110011)_2$ into decimal equivalent. **[1]**

P.T.O.

Q2) Attempt <u>any</u> <u>two</u> of the following:

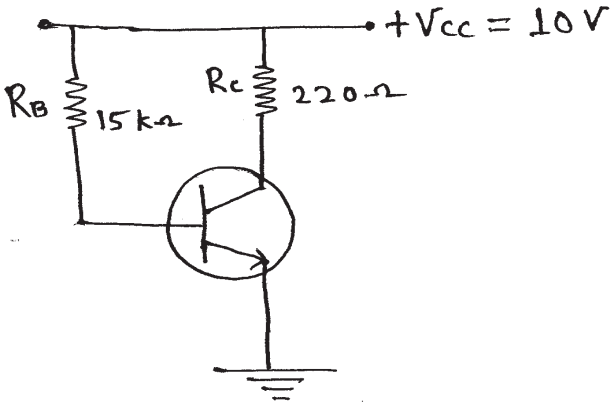
a) Explain input and output characteristics of the transistor connected in common emitter configuration. **[5]**

b) Draw the circuit diagram and input - output waveforms of Half-wave rectifier. Show that maximum efficiency of Half-wave rectifier is 40.6%. **[5]**

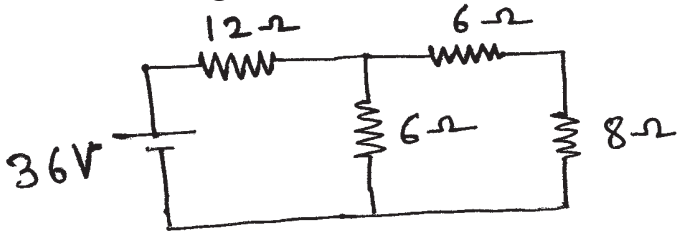
c) State the Barkhausen criterion for an oscillator. Describe phase-shift oscillator with the help of circuit diagram. **[5]**

Q3) Attempt <u>any</u> <u>two</u> of the following:

a) Determine the values of I_B, I_C and V_{CE} in a given CE transistor circuit. (Given: $V_{BE} = 0.7$ volt, $\beta = 50$) **[5]**



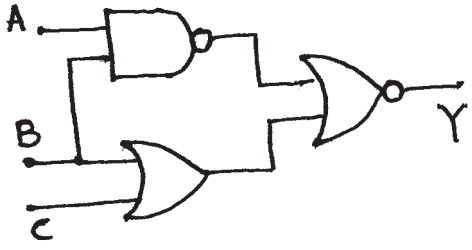
b) Using Thevenin's theorem, calculate the current flowing through 8Ω resistor of the following circuit. **[5]**



c) Find the Boolean expression for the output of following logic circuit. Find it's output when **[5]**

i) A = 1, B = 1, C = 0

ii) A = 0, B = 0, C =1



Q4) A) Attmept (a) or (b) of the following:

a) i) What is logic gate? Explain 'NOR', 'NOT' and 'EX-OR' gates with symbol and truth table. **[4]**

ii) Explain the circuit of Op-Amp as an 'Adder'. Derive necessary formula. **[4]**

b) i) Draw symbol and equivalent circuit of UJT and discuss its working. **[4]**

ii) Draw the circuit diagram of the Non-inverting Op-Amp and derive the formula for gain. **[4]**

B) Attempt any <u>one</u> of the following:

a) A constant 0.5V input is given to an inverting Op-Amp. Determine the output voltage if $R_i = 2k\Omega$ and $R_F = 20\ k\Omega$. **[2]**

b) Define the term, 'Line Regulation' and state the formula of percentage Line Regulation. **[2]**

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Total No. of Questions :4]

P973

[5017]-1004
S.Y.B.Sc.
PHYSICS
PH-212 (B): Instrumentation
(2013 Pattern) (Paper -II)(Semester - I)

Time : 2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***
4) ***Use of log tables and calculators is allowed.***

Q1) Attempt all of the following (1 mark each): **[10]**

a) State the principle used in elastic transducers.

b) State the principle used in variable inductance transducer.

c) Define linearity.

d) What is LVDT?

e) Define open loop gain of op-amp.

f) Draw pin diagram of IC - 741.

g) What are types of analog recorder.

h) Define Gauge pressure.

i) Draw circuit diagram of Buffer using Op-Amp.

j) What is the sensitivity of measuring instrument?

Q2) Attempt any two of the following (5 marks each): **[10]**

a) Write a short note on Thermal element as a first order system of measurement.

b) What do you mean by cantilever beam? Explain how it is used for the measurement of force.

c) Explain with circuit diagram of Inverting amplifier using OP-AMP.

Q3) Attempt any two of the following (5 marks each): **[10]**

a) A capacitive transducer uses two quartz diaphragms of area 750 mm^2 separated by a distance 3mm. A pressure of 900 kN/m^2 when applied to top diaphragm produces a deflection of 0.6 mm. The capacitance is 370 pf when no pressure is applied to the diaphragms. Find the value of capacitance after application of pressure of 900 kN/m^2.

b) Calculate the gain of non-inverting amplifier when input resistance at inverting terminal is 10kΩ and feedback resistance is 200kΩ. If the feedback resistance is doubled, what is the change in the voltage gain?

c) When a pressure is applied for a membrane type diaphragm of radius 5 cm and thickness 0.15 cm shows maximum deflection at center 0.05 cm. Find pressure acting on it. (Given: Young's modulus = 12×10^{11} N/m^2).

Q4) A) Attmept (a) or (b) of the following:

a) i) Explain in detail Oscillographic recorder. **[4]**

ii) What do you mean by variable capacitance transducer? Explain variation in capacitance by changing common area of the plates. **[4]**

b) i) Explain active high pass filter with circuit diagram. **[4]**

ii) What are functional elements of a typical measurement system? Explain basic functional elements with block diagram. **[4]**

B) Attempt any one of the following:

a) A manufacturer calibrates a temperature gauge of 100°C, range with $\pm$ 0.5°C. If it is used for temperature measurement of 50°C, what will be the probable minimum and maximum value of temperature shown by gauge? **[2]**

b) Explain the concept of virtual ground in op-amp. **[2]**

EEE

Total No. of Questions :6]

SEAT No. :

P974

[Total No. of Pages :3

[5017] - 1005

S.Y.B.Sc.

CHEMISTRY

CH - 211 : Physical and Analytical Chemistry

(2013 Pattern) (Semester - I) (Paper - I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Use of calculator is allowed.***
5) ***Answer to both sections should be writen in separate answer books.***

SECTION - I

Q1) Answer the following: **[5]**

a) What is rate of reaction?

b) Write the rate law equation for the reaction.

$$A + B + 2C \rightarrow \text{Product}$$

c) What is meant by chemiluminesence?

d) Give the limitations of Nernst distribution law.

e) State Einsteins law of photochemical equivalence.

Q2) a) Attempt Any Two of the following: **[6]**

i) Derive an expression for the velocity constant of second order with equal initial concentration.

ii) What is quantum yield? Discuss the causes of high and low quantum yield.

iii) Distinguish between order and molecularity of of reactions.

P.T.O.

b) Attempt Any Two of the following: **[4]**

i) Explain quenching of fluorescence.

ii) What is photocatalysis? Explain with suitable example.

iii) Give the characteristics of first order reaction.

Q3) Solve Any Two of the following: **[5]**

a) The rate of first order reaction is 3.9×10^{-3} per second at $25^{o}C$. Find the time required to complete 45% of the reaction.

b) In a given photochemical reaction 3.7×10^{17} photons are absorbed per second. After 1000 seconds of irradiation 6.6×10^{-5} moles of product is formed. Calculate the quantum yield of the reaction.

c) Calculate the amount of acid extracted from one litre of aqueous solution containing 20 gm of an acid on extracting with 100 ml of ether in a single lot. (Given: Partition Coefficient of an acid in Water is 7.5).

SECTION - II

Q4) Answer the following: **[5]**

a) Define Gross Sampling.

b) Find the proper number of significant figures in 0.0089 gm and 30.090 gm.

c) Which is group reagent for III A group.

d) Define the term empirical formula.

e) Give the names of interfering anions in inorganic qualitative analysis.

Q5) a) Answer Any Two of the following: **[6]**

i) What is common ion effect? Explain any one application of it in inorganic qualitative analysis.

ii) Explain Duma's method of nitrogen estimation in organic compounds.

iii) How is aldehyde detected? Give its characteristic tests.

b) Answer Any Two of the following: **[4]**

i) Write a note on factors affecting choice of method in chemical analysis.

ii) Explain the terms accuracy and precision.

iii) Explain theory of interference of phosphate radicals in inorganic qualitative analysis.

Q6) Solve Any Two of the following: **[5]**

a) Following percentage of chlorine in an organic compound was reported by different students as 40.2, 41.6, 40.3 and 40.9%. Calculate mean deviation and standard deviation.

b) 0.253 gm of chlorine substituted organic compound gave in a carius determination 0.341 gm of AgCl. Calculate the percentage of chlorine in the given compound.

[Given : Molecular weight of AgCl = 143.5]

c) Calculate the solubility of sparingly soluble salt of MnS in water.

[Given : Ksp for Mns = 1.4×10^{-15}]

Total No. of Questions :6]

SEAT No. :

P975

[Total No. of Pages :3

[5017]-1006
S.Y.B.Sc.
CHEMISTRY
CH -212:Organic and Inorganic Chemistry
(2013 Pattern) (Paper - II) (Semester - I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***Answer of the two sections should be written on separate answer books.***
2) ***All questions are compulsory.***
3) ***Figures to the right side indicate full marks.***
4) ***Neat diagrams must be drawn whereve necessary.***

SECTION-I

(Organic Chemistry)

Q1) Attempt the following: **[5]**

a) Define the term diastereomers.

b) Define Saytzeff rule.

c) Draw geometrical isomers of trans 1,4 dimethyl cyclohexane.

d) What are electrophiles and nucleophiles?

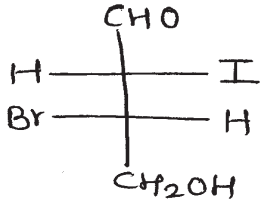
e) Define chiral centre with suitable example.

Q2) a) Answer Any Two of the following: **[6]**

i) What is SN2 reaction? Discuss the mechanism of SN2 reaction with suitable example.

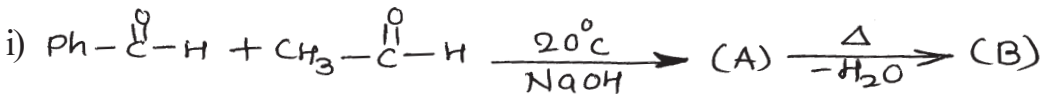
ii) Draw the conformation of t-butyl cyclohexane. Explain, why is t - butyl group locked in equatorial position?

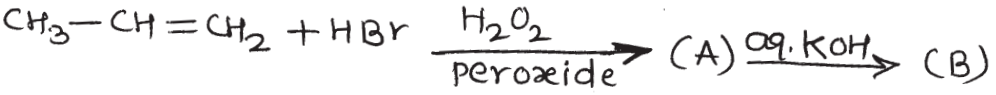
iii) Define threo isomers. Assign 'R' & 'S' configurations.

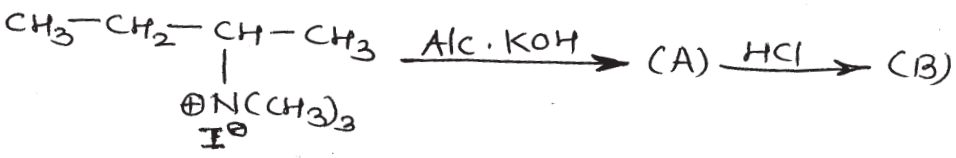


P.T.O.

b) Assign (A) & (B) of the following reactions (any two): **[4]**

i) 

ii) 

iii) 

Q3) Attempt <u>any two</u> of the following: **[5]**

a) Baeyer's strain theory failed to explain stability of higher cycloalkanes.

b) What are rearrangement reaction? Explain Beckmann rearrangement.

c) Explain Markovnikov's Addition reaction with suitable example and their mechanism.

SECTION-II

(Inorganic Chemistry)

Q4) Answer the following: **[5]**

a) Define the term calcination.

b) Give the names of two ores of aluminium.

c) Name the metal used for galvanisation.

d) What is pig - iron?

e) What are the types of corrosion?

Q5) a) Answer <u>any two</u> of the following: **[6]**

i) Explain manufacture of wrought iron by puddling process.

ii) How bauxite is purified by Baeyer's process.

iii) Discuss any two factors which affect the process of corrosion.

b) Answer <u>any two</u> of the following: **[4]**

i) Distinguish between ore and mineral.

ii) Write short note on magnetic separation.

iii) Discuss important applications of aluminium.

Q6) Answer <u>any two</u> of the following: **[5]**

a) Define the term electroplating. Explain tinning process.

b) Explain with the help of neat diagram and chemical resactions L.D. Process.

c) What is dressing of ore? Explain the gravity separation for purification of ores.

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Total No. of Questions : 4]

SEAT No. :

P976

[Total No. of Pages : 2

[5017]-1007
S.Y.B.Sc.
BOTANY
BO-211: Taxonomy of Angiosperms & plant Community
(2013 Pattern)(Semester-I) (Paper-I)

Time : 2Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following. **[10]**

a) What is systematics?

b) Write an example of Natural system of classification.

c) What is mannual?

d) Write a source of anatomical data in plant systematics.

e) What is a type of fruit present in family solanaceae?

f) Give any one advantage of Herbarium.

g) Define xerophyte.

h) What is synecology?

i) Give the subclass of family meliaceae.

j) What is I C B N ?

Q2) Answer Any Two of the following: **[10]**

a) Give merits and limitations of carolous Linnaeus system of classification.

b) Explain the role of morphological data as a source in plant systematics.

c) Describe the pyramid of energy.

P.T.O.

Q3) Write notes on (any two): **[10]**

a) Economic importance of family euphorbiaceae.

b) Concept of e-herbrium.

c) Principle of Priority.

Q4) Give distinguishing charactures,Floral formula, Floral diagram and Economic importance of family amaryllidaceae. **[10]**

OR

What are Hydrophytes? Describe external and internal ecological adaptations in hydrophytes.

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Total No. of Questions : 4]

SEAT No. :

P977

[Total No. of Pages : 2

[5017]-1008
S.Y.B.Sc.
BOTANY
BO-212: Plant Physiology
(2013 Pattern) (Paper-II) (Semester -I)

Time : 2Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following: **[10]**

a) Define plant physiology.

b) What is denitrification?

c) Write any two factors affecting water absorption.

d) Enlist the types of transpiration.

e) What is active absorption of water?

f) Enlist any two factors affecting ascent of sap.

g) Define "Grand period of growth".

h) Define Guttation.

i) What is non-symbiotic N_2 fixation?

j) What is the importance of plant physiology?

Q2) Answer Any Two of the following: **[10]**

a) Role of Nitrogen in plants.

b) Give Practical applications of GA.

c) What is seed dormancy ?Describe types of seed dormancy.

P.T.O.

Q3) Write notes on (any two): **[10]**

a) Root pressure theory of ascent of sap.

b) Role of water in plants.

c) Antitranspirants.

Q4) What is photoperiodism? Give classification of plants based on photoperiodism. Describe each type with suitable example. **[10]**

OR

What is osmosis ? Describe the mechanism of osmosis in detail. **[10]**

❄ ❄ ❄

Total No. of Questions : 4]

SEAT No. :

P978

[Total No. of Pages : 2

[5017]-1009
S.Y.B.Sc.
ZOOLOGY
ZY-211:Animal Systematics and Diversity -III
(2013 Pattern) (Semester - I) (Paper - I) (Revised)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Neat labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following: **[10]**

a) What is radial symmetry?

b) Write any two distinguishing characters of myriapoda.

c) What is mysislarva?

d) What is holometabolous development.

e) Give any two foot modificationsin mollusca.

f) Enlist any two larval forms found in class-Holothuroidea.

g) What is antotomy?

h) Write any two characters of phylum mollusca.

i) Give any two names of useful insects.

j) Give any two examples of class-Amphineura.

Q2) write short notes on (any two) **[10]**

a) Economic importance of mollusca.

b) Pyloric caecae.

c) Zoea larva.

P.T.O.

Q3) Attempt the following (any two) **[10]**

a) Write distinguishing characters of crustacea.

b) Sketch and label sponging type of mouth parts.

c) Describe feeding mechanism in star fish.

Q4) Describe the habit, habitat and external characters of starfish. **[10]**

OR

Give general characters of phylum Arthropoda and distinguishing characters of class-Arachnida.

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Total No. of Questions : 4]

SEAT No. :

P979

[Total No. of Pages : 2

[5017]-1010
S.Y.B.Sc.
ZOOLOGY -II
ZY-212:Applied Zoology -I
(Fisheries and Agricultural Pest and their Control)
(2013 Pattern) (Semester - I) (Paper - II) (Revised)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***

Q1) Attempt the following: **[10]**

a) What is Brackish water fishery?

b) Mention any two stored grain pests.

c) What do you mean by deed heart?

d) What is physical pest control?

e) What is fish glue?

f) What is induced breeding?

g) Mention any two hazzards of pestcides.

h) Write the name of equipment used for harvesting Bombay duck.

i) Mention any two damages caused by Brinjal fruit borer.

j) What is rearing pond.

Q2) Write short notes on (any two) **[10]**

a) Drying and canning techniques in fish preservation.

b) Describe harvesting method of Pearl oyster.

c) Crabs and rats as a non insect pests.

P.T.O.

Q3) Attempt the following (any two) **[10]**

a) Describe in brief Cyanogas pump.

b) Sketch and lebel Purse Net.

c) Describe in brief chemical control.

Q4) Describe marks of identification, nature of damage and control measures of Red cotton Bug and Rice weevil. **[10]**

OR

Describe habits,habitat and culture methods of Lobster and Labeo rohita.

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Total No. of Questions : 4]

SEAT No. :

P980

[Total No. of Pages : 2

[5017]-1011
S.Y.B.Sc.
GEOLOGY
GL-211:Mineralogy
(2013 Pattern) (Semester - I) (Paper - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Answer the following questions in 2/3 lines: **[10]**

a) What is asterism?

b) Explain metamict minerals.

c) State the different types of twinning observed in minerals of orthorhombic system.

d) Define twin plane.

e) State the groups from which minerals will show isotropism.

f) Name minerals from hexagonal system.

g) Name the gem varieties of feldspar group.

h) What is the base unit of all silicate minerals? What is the charge on it?

i) State the main difference between the silicate structure of pyroxenes and amphiboles.

j) Gem varieties of Beryl group.

Q2) Write notes on (any 2) **[10]**

a) Optical properties of biotite.

b) Classification of minerals based on silicate structure.

c) Main attributes of gemstones.

P.T.O.

Q3) Write notes on (any 2) **[10]**

a) Causes of twinning.

b) Compare Elements of symmetry of cubic system, type pyrite and type tetrahedrite.

c) Phenomenon of anisotropism.

Q4) Describe the structure, mineral composition, physical and optical properties and paragenesis of olivine group of minerals. **[10]**

OR

Describe the structure, mineral composition, physical and optical properties and paragenesis of feldspathoid group of minerals.

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Total No. of Questions : 4]

SEAT No. :

P981

[Total No. of Pages : 2

[5017]-1012
S.Y.B.Sc.
GEOLOGY
GL-212: Structural Geology
(2013 Pattern) (Semester-I)(Paper-II)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following questions. **[10]**

a) Define normal fault.

b) Define dip to a bed.

c) Define syncline.

d) Define non-plunging fold.

e) Define bedding joints.

f) Define 'Hanging wall' of fault.

g) What is Inlier?

h) Define structural Geology.

i) Define dome.

j) Define nonconformity.

Q2) Write notes on (Any two) **[10]**

a) Chevron and box folds.

b) Genetic classification of fault.

c) Genetic classification of joints.

P.T.O.

Q3) Answer the following questions (Any two) **[10]**

a) Draw Brunton compass showing various parts.

b) Write a note on angular unconformity and disconformity.

c) Write a not on significance of gradded bedding in identifying the top of the bed.

Q4) What are primary structures ? Describe how ripple marks help in determining the top of the bed. **[10]**

OR

Describe the term associated with fault .Explain the types of movement along faults and enumerate the criteria of recognising faults in the field.

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Total No. of Questions : 4]

SEAT No. :

P982

[Total No. of Pages : 3

[5017]-1013
S.Y. B.Sc.
STATISTICS
ST - 211 : Discrete Probability Distributions, Time Series and R-Software
(2013 Pattern) (Paper-I) (Semester-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and statistical tables is allowed.***
4) ***Symbols and abbreviations have their usual meaning.***

Q1) Attempt each of the following:

A) Choose the correct alternative in each of the following: **[1 each]**

a) If $(X_1, X_2....X_k) \rightarrow MD\ (n, p_1, p_2...p_k)$, then $Cov(X_1, X_2)$ is

i) np_1p_2 ii) $-np_1p_2$

iii) $np_1(1-p_2)$ iv) $-np_1(1-p_2)$

b) If $X \sim NB\ (5, 0.25)$, then E(X) is equal to

i) 15 ii) 5/3

iii) 0.25 iv) 5

c) In a time series analysis effect of flood gives rise to

i) seasonal variations ii) cyclic variations

iii) irregular variations iv) secular trend

B) State whether each of the following statements is True or False: **[1 each]**

a) In a time series analysis, method of moving average is superior to method of curve fitting for estimation of trend.

b) R command for writing sequence 1, 5, 9, 13, 17 is >seq (1, 4, 17).

c) For negative binomial distribution mean is always less than variance.

P.T.O.

C) State mean of truncated binomial distribution, truncated at zero. **[1]**

D) State any two features of R software. **[1]**

E) Give any one real life situation where trinomial distribution is applicable. **[1]**

F) State four phases of business cycle. **[1]**

Q2) Attempt Any Two of the following: **[5 each]**

a) Write a note on AR(I) model in time series analysis.

b) Find the marginal probability distribution of X_1 where $(X_1, X_2, X_3) \rightarrow MD$ (n, p_1, p_2, p_3). Also find conditional probability distribution of X_2 given $X_1 = x_1$.

c) In a certain locality 40% persons are illiterate. Find the probability that, on a particular day 5^{th} person arriving at a counter in a certain bank is the second illiterate person.

Q3) Attempt Any Two of the following: **[5 each]**

a) Define truncated Poisson distribution, truncated at zero. Derive its mean.

b) Describe ratio to moving average method for estimation of seasonal variations in time series.

c) Give the output of the following:

i) > x = 1:4
> x * x

ii) > x = rep (6, 2)
> x

iii) > x = c(3, 14, 5, 2)
> y = c(0, 2)
> x + y

iv) > x = c(1, 4, 4, 6, 4, 7)
> unique (x)

v) > x = c(140, 138, 164, 198)
> x[–2, –3]

Q4) Attempt Any One of the following:

a) i) If $(X_1, X_2....X_k) \rightarrow MD(n, p_1, p_2...p_k)$, derive joint probability distribution of (X_i, X_j), $i \neq j$. Hence find $E(X_iX_j)$, $(i, j = 1, 2...k)$. **[5]**

ii) For the following time series fit exponential smoothing with damping factor $0.9(=1-\alpha)$. **[5]**

Year	1990	1991	1992	1993	1994	1995
Y_t	54	66	62	68	59	63

b) i) Let $\underline{X} = (X_1, X_2, X_3) \rightarrow MD\left(10, \frac{1}{2}, \frac{1}{4}, \frac{1}{4}\right)$. Show that determinant of variance-covariance matrix is zero. **[4]**

ii) Write a note on Holt-Winter method for exponential smoothing. **[6]**

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Total No. of Questions : 4]

SEAT No. :

P983

[Total No. of Pages : 3

[5017]-1014
S.Y. B.Sc.
STATISTICS
ST - 212 : Continuous Probability Distributions
(2013 Pattern) (Paper-II) (Semester-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of scientific calculator and statistical tables is allowed.***
4) ***Symbols and abbreviations have their usual meaning.***

Q1) Attempt each of the following:

A) Choose the correct alternative in each of the following: **[1 each]**

a) If $M_X(t)$ is the moment generating function (m.g.f.) of a r.v. X then the m.g.f. of $2X + 5$ is

i) $M_X(2t + 5)$ ii) $M_X(2t - 5)$

iii) $e^{5t} M_X(2t)$ iv) $e^{2t} M_X(5t)$

b) If (X, Y) is a continuous bivariate r.v. then $E(Y|X = x)$ is a function of

i) X ii) Y

iii) both X and Y iv) none of X or Y

c) Normal probability distribution is

i) Symmetric and leptokurtic

ii) Symmetric and mesokurtic

iii) Positively skewed and mesokurtic

iv) Positively skewed and leptokurtic

P.T.O.

B) State whether each of the following statements is True or False: **[1 each]**

a) If $X \rightarrow U(a, b)$, then probability distribution of $\frac{b-x}{b-a}$ is $U(a, b)$.

b) A.M. of $G(\alpha, \lambda)$ distribution is always greater than its variance.

c) If X and Y are independent standard normal variable then X + Y and X – Y are independent and each follows N(0, 2) distribution.

C) Define a continuous sample space. Give one example. **[1]**

D) Let (X, Y) be a continuous bivariate r.v. Define $(r, s)^{th}$ control moment of (X, Y), $r, s = 0, 1, 2, ...$ **[1]**

E) Sketch the p.d.f. of X which follows U(2, 4) distribution. **[1]**

F) If the joint p.d.f. of (X, Y) is $f(x, y) = \begin{cases} kxy, 0 < x < 1; \\ \quad 0 < y < 1, \\ 0 \quad \text{, otherwise} \end{cases}$

find the value of the constant K. **[1]**

Q2) Attempt Any Two of the following: **[5 each]**

a) Define p.d.f. of a r.v.X. If X is a continuous r.v. with p.d.f. $f(x)$, explain how to obtain the p.d.f. of $Y = X^2$.

b) The joint p.d.f. of (X, Y) is $f(x, y) = \begin{cases} \frac{x(x-y)}{8}, 0 < x < 2, \\ \qquad -x < y < x \\ 0 \qquad \text{, otherwise} \end{cases}$

Find:

i) Marginal p.d.f. of X,

ii) Conditional mean of $Y|X = x$.

c) Let $X \rightarrow Exp(\alpha)$. Obtain the m.g.f. of X- Hence find the mean and variance of X.

Q3) Attempt Any Two of the following: **[5 each]**

a) If $X \sim N(4, \sigma^2)$, find the quartiles and quartile deviation of X.

b) Suppose X is a r.v. with p.d.f. $f(x) = \begin{cases} \dfrac{1}{(1+x)^2}, & x \geq 0 \\ 0, & \text{otherwise} \end{cases}$.

If $A = \{x \mid 1 \leq x \leq 8\}$, $B = \{x \mid 0 < x < 5\}$, find $P(A \cap B)$ and $P(A \cup B)$.

c) Let $X_1 \sim G(\alpha = 4, \lambda = 2)$, $X_2 \sim G(\alpha = 6, \lambda = 3)$. if X_1 and X_2 are independent random variables, find the probability distribution of $Y = 2X_1 + 3X_2$. State the mean and variance of Y.

Q4) Attempt Any One of the following:

a) i) Verify whether the following function is the b.d.f. of a r.v.X:

$$f(x) = \begin{cases} x, & 0 \leq x \leq 1 \\ 2 - x, & 1 \leq x \leq 2 \\ 0, & \text{otherwise} \end{cases}. \quad \textbf{[3]}$$

ii) If $X \sim$ Poission (m), show that $Y = \dfrac{X - m}{\sqrt{m}}$ follows approximately N(0, 1) distribution as $m \to \infty$. **[5]**

iii) If $X \to U(a, b)$, $E(X) = 1$ and $Var(X) = 3$, find the values of a and b. **[2]**

b) i) Define distribution function of a bivariate continuous r.v. (X, Y). State any two of its properties. **[3]**

ii) Check whether X and Y are independent random variables if the joint p.d.f. of (X, Y) is

$$f(x, y) = \begin{cases} 8xy, & 0 < x \leq y < 1 \\ 0, & \text{otherwise} \end{cases} \quad \textbf{[4]}$$

iii) If X is a r.v. with p.d.f. $f(x) = \dfrac{1}{3\sqrt{2\pi}} e^{-\frac{1}{18}(x-4)^2}$, find $P(2X + 3 > 14)$. **[3]**

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Total No. of Questions : 4]

SEAT No. :

P984

[Total No. of Pages : 2

[5017]-1015
S.Y.B.Sc.
GEOGRAPHY
Gg-211: Geography of Resources -I
(Semester-I) (2013 Pattern) (Paper-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams and sketches wherever necessary.***
4) ***Use of map stencils is allowed.***

Q1) Answer the following questions in two to three sentences each (any TEN)**[10]**

a) Give the definition of 'resource'.

b) Name the components of resources.

c) Name any two biotic renewable resources.

d) Give any two examples of abiotic resources.

e) Give two indirect uses of forest resources.

f) Name any two plant species of the temperate forest.

g) Which are the various water resources?

h) Name any two industrial uses of water.

i) Give two examples of land degradation due to deforestation.

j) State any two methods of conservation of land resources.

k) What is meant by jhum cultivation?

l) Name two biotic non renewable resources.

m) What are human resources?

P.T.O.

Q2) Write short notes on the following (any TWO): **[10]**

a) Classification of resources.

b) Importance of the study of resources.

c) Land degradation due to mining.

d) Importance of water transport.

Q3) Answer the following questions in 100 words each (any TWO). **[10]**

a) Explain land degradation due to agricultural activities.

b) Highlight the importance of abiotic resources.

c) Elaborate the causes of deforestation.

d) Describe the components of natural resources.

Q4) Answer the following questions in 200 words (any ONE). **[10]**

a) Explain the significance of forests in detail.

b) Describe the various methods of conservation of water resources.

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Total No. of Questions :4]

SEAT No. :

P985

[Total No. of Pages :2

[5017] - 1016

S.Y.B.Sc.

GEOGRAPHY

Gg - 212 : Watershed Management

(2013 Pattern) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams and sketches wherever necessary.***
4) ***Use of map stencils is allowed***

Q1) Answer the following questions in two to three sentences each (Any ten): **[10]**

a) Define Watershed.

b) Write any two principles of watershed management.

c) Write any two objectives of watershed management.

d) Write any two benifits of watershed management.

e) What is aerial aspects?

f) What is evapotranspiration?

g) Define soil.

h) Write any two physical characteristics of soil.

i) Write any two hydrological characteristic of soil.

j) Write any two processes of soil erosion due to water.

k) What is land capability?

l) Write any two criteria for land capability classification.

m) Write any two methods of land capability classification.

P.T.O.

Q2) Write short notes on the following (any two): **[10]**

a) Problems in watershed management.

b) Ground water flow.

c) Physical characteristics of soil.

d) Land capability classification.

Q3) Answer the following questions in 100 words each (any two): **[10]**

a) Explain the principles of watershed management.

b) Explain the relief aspects of watershed.

c) Explain the factors affecting soil erosion by water.

d) Describe the methods of land capability classification.

Q4) Answer the following questions in 200 words (Any one): **[10]**

a) Describe Geomorphological characteristics of watershed in detail.

b) Define hydrological cycle. Explain hydrological cycle with suitable diagram.

Total No. of Questions : 4]

SEAT No. :

P986

[Total No. of Pages :2

[5017]-1017
S.Y.B.Sc.
MICROBIOLOGY
MB-211:Bacterial Systematics & Physiology
(2013 Pattern) (Semester-I) (Theory) (Paper-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat laelled diagram wherever necessary.***

Q1) Answer the following: **[10]**

a) Define prosthetic group with example.

b) Give any two examples of high energy compounds.

c) State true or false.

i) Fermentation process yields less energy than respiration process.

ii) All enzymes are proteins.

d) Enlist any two commonly occuring aminoacids at active site of an enzyme.

e) Define T_m.

f) What is chemotaxonomy?

g) What is the role of 'Isomerases' in enzyme catalysed reactions.

h) Draw the structure of KDPG.

i) Hexokinase belongs to _____ class of enzyme.

Q2) Attempt <u>any two</u> of the following: **[10]**

a) Schematic representation of EMP pathway.

b) Describe any one method of DNA hybridization in bacterial classification.

c) Describe oxido reductase class of enzyme with two examples.

P.T.O.

Q3) Answer <u>any two</u> of the following: **[10]**

a) Describe the effect of temperature on enzyme activity.

b) What are radioisotopes? Describe the role of 'pulse-chase' experiment in study of metabolic pathways.

c) Describe 'Chemiosmotic hypothesis' for ATP formation.

Q4) Attempt <u>any one</u> of the following: **[10]**

a) Describe HMT pathway with structures. Add a note on it's significance.

b) What is numerical toxonomy? Describe in detail it's general procedure used in bacterial classification.

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Total No. of Questions :4]

SEAT No. :

P987

[Total No. of Pages :2

[5017] - 1018

S.Y.B.Sc.

MICROBIOLOGY

MB - 212 : Industrial and Soil Microbiology

(2013 Pattern) (Semester - I) (Theory Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams and sketches wherever necessary.***

Q1) Answer the following: **[10]**

a) Enlist any two viral biocontrol agents.

b) What is a role of impeller in fermenter.

c) Write any two examples of chemical antifoam agents.

d) What is batch fermentation? Give any one example.

e) Enlist any two micro organisms involved in lignin degradation.

f) Define synergism.

g) Enlist any two cyanobacterial biofertilizers.

h) What is the role of phosphate solubilising bacteria.

i) State whether true or false - Molasses require pretreatment before addition in fermentation media.

j) Vinegar fermentation is _____ type of fermentation.

i) Batch

ii) Continous

iii) Dual

P.T.O.

Q2) Attempt any two of the following: **[10]**

a) What is inoculum? Describe the procedure of inoculum preparation.

b) Describe the control and monitoring of pH in fermentation process.

c) Describe the role of micro organisms in composting and humus formation.

Q3) Attempt any two of the following: **[10]**

a) What are microbial interactions? Describe competition in detail.

b) What is agitation? Describe the role of antifoam agents in fermentation process.

c) What are biofertilisers? Describe the media used, micro organisms involved and flow sheet for large scale production of fungal biofertilisers.

Q4) Describe the precursors, inhibitors and inducers used in fermentation media preparation. **[10]**

OR

Describe carbon cycle in detail.

Total No. of Questions : 4]

SEAT No. :

P988

[Total No. of Pages : 2

[5017]-1019
S.Y.B.Sc.
PSYCHOLOGY
EP-211:Psychology of Adjustment
(2013 Pattern)(New Course) (Semester - I) (Paper - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***Attempt all questions.***
2) ***Draw figures and diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer in two & four sentences. **[16]**

a) Define adjustment.

b) What is the full form of DSM?

c) What is happiness?

d) What is abnormal behaviour?

e) What is coping?

f) Define work.

g) What is underemployment?

h) What is behaviorism?

Q2) Attempt any two of the following in eight or ten sentences **[8]**

a) Describe various roots of happiness.

b) Describe the stages of family life cycle.

c) Describe the criteria of abnormal behaviour.

P.T.O.

Q3) Write short notes on <u>any two</u> of the following: **[8]**

a) Sources of job stress.

b) psychoanalytic approach of adjustment.

c) Schizoid personality desorder.

Q4) Describe in detail various types of auxiety desorders **[8]**

OR

Explain holland & super's model of career choice & development.

Total No. of Questions : 4]

SEAT No. :

P989

[Total No. of Pages : 2

[5017]-1020
S.Y.B.Sc.
PSYCHOLOGY
EP-212 : Experimental Psychology and Research Methodology
(2013 Pattern)(New Course)(Semester -I) (Paper-II)

Time : 2Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***Attempt all questions.***
2) ***Draw figures and diagrams wherever necessary***
3) ***Figures to the right indicate full marks.***

Q1) Answer in two or four sentences. **[16]**

a) Define Research.

b) What is generalization?

c) Define thinking.

d) Define reinforcement.

e) State various types of questionnaire.

f) What is conditioning?

g) What is problem solving?

h) Define hypothesis.

Q2) Answer any two of the following in eight or ten sentences. **[8]**

a) Explain the characteristics of a good questionnaire.

b) Describe insight is problem solving.

c) Explain iinstrumental conditioning.

P.T.O.

Q3) Write short notes (any two) **[8]**

a) Validity of Research.

b) Abstraction.

c) Determinants of thinking.

Q4) Give the characteristics of research. Explain the steps in research. **[8]**

OR

Explain in detail the parameters of conditioning.

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Total No. of Questions : 4]

SEAT No. :

P990

[Total No. of Pages : 2

[5017]-1023
S.Y.B.Sc.
ELECTRONIC SCIENCE
EL- 211: Analog Circuit Design
(2013 Pattern) (Semester - I) (Paper - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of non-programmable calculator is allowed.***

Q1) Answer all of the following:

a) What is the overall gain of 3- stage amplifier? **[1]**

b) Give the role of tank circuit in oscillator. **[1]**

c) What is class - A amplifier? **[1]**

d) Write the expression for gain of an amplifier with positive feedback. **[1]**

e) "Heat sinks are used to avoid thermal runway." comment. **[2]**

f) "In a differential amplifier, constant current bias provides stabilization."comment. **[2]**

g) In a single input unbalanced differential amplifier, determine common mode gain if R_C= 1kohm and R_E = 4.7kohm. **[2]**

h) Calculate the value of a bypass capacitor in a single stage CE amplifier if lower cutoff frequency is 30 Hz and R_E =180Ω. **[2]**

Q2) Answer any two of the following:

a) Discuss classification of amplifier on the basis of coupling methods. **[4]**

b) What is Barkhausen criterion for sustained oscillations.Explain the working of Hartley oscillator circuit . **[4]**

c) Explain the concept of precision rectifier using Op-Amp. **[4]**

P.T.O.

Q3) Answer any two of the following.

a) With the help of block diagram, explain **[4]**

i) Current series feedback &

ii) Current shunt feedback.

b) What is differential amplifier? Give the name of its configurations.Draw the circuit diagram of dual input balanced output differential amplifier.**[4]**

c) Explain the working of complementary symmetry class B push pull amplifier in detail. **[4]**

Q4) Answer all of the following.

a) List various type of oscillators. Explain the working of RC phase shift oscillator with neat diagram. **[6]**

b) With the help of circuit diagram, explain the effect of coupling and bypass capacitors on frequency response of CE amplifier. **[6]**

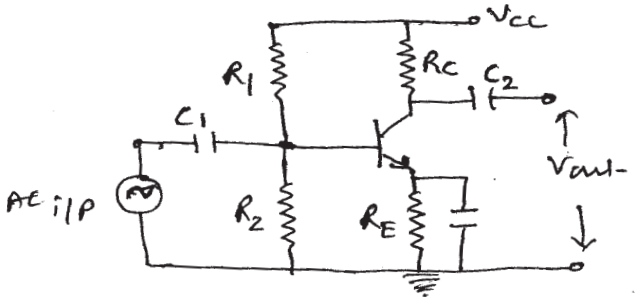
OR

Answer all of the following.

a) A power transistor dissipates 10 watt energy. Find maximum junction temperature. Given :- $T_a = 30\ ^oC$ and $Q = 2\ ^oC/W$. **[4]**

b) Find output voltage of an instrumentation amplifier and gain of it. Given :- $R_1 = 1k\Omega$, $R_2 = 10k\Omega$, $R_3 = 10k\Omega$ and $R_G = 1.5k\Omega$ when $V_1 = 1V$, $V_2 = 1.10$ V. **[4]**

c) Draw dc load line for the following transistor circuit. **[4]**



Given : $R_C = 4k\Omega$

$R_E = 5k\Omega$

$V_{CC} = 30$ V.

❖ ❖ ❖

Total No. of Questions : 4]

SEAT No. :

P991

[Total No. of Pages : 2

[5017]-1024
S.Y.B.Sc.
ELECTRONIC SCIENCE
EL-212: Digital Circuit Design
(2013 Pattern) (Paper-II) (Semester - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer all of the following:

a) What is K- map? **[1]**

b) What is an excitation table? **[1]**

c) Define resolution in DAC. **[1]**

d) Determine total delay in 8-bit serial In serial Out shift register if t=1 μsec. **[1]**

e) "Parity bit is purposely added bit in a binary number". Comment. **[2]**

f) "Gray code is used for shaft encoder".Comment. **[2]**

g) Determine load voltage in an electromechanical relay if load current is 5 amp, supply voltage is 10 volts and voltage drop across contacts is 2 volts. **[2]**

h) Draw state diagram and write truth table of MOD-3 counter. **[2]**

Q2) Attempt any two of the following:

a) Draw the general block diagram of DAC. Explain it. **[4]**

b) What is modulo-n counter? Draw the logic diagram & output waveforms of MOD-5 counter. **[4]**

c) Write a short note on two digit bank token display system. **[4]**

P.T.O.

Q3) Attempt any two of the following:

a) Design 3-bit synchronous counter using K-map. **[4]**

b) Draw the diagram of non-multiplexed display system. State its disadvantage. **[4]**

c) With block diagram, explain auto parking system. **[4]**

Q4) Attempt all of the following:

a) Design 4-bit binary to gray code converter using K-map and implement using logic gates. **[6]**

b) Draw logic diagram of MOD-10 asynchronous counter using J-K flipflop and explain its operation. **[6]**

OR

Attempt all of the following:

a) Calculate conversion time and the average conversion time for a 8-bit counter type ADC with 10 MHz clock frequency. **[4]**

b) Design full adder using K-map. **[4]**

c) What will be the output voltage from 4-bit weighted registive type DAC for following digital inputs. **[4]**

i) 1001 ii) 0110

Assume logic '0'= 0 volts and

logic '1'= 10 volts.

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Total No. of Questions : 4]

SEAT No. :

P992

[Total No. of Pages : 1

[5017]-1025
S.Y.B.Sc.
DEFENCE AND STRATEGIC STUDIES
DSSY-101: Study of Conflict and Peace
(2013 Pattern) (Paper-I) (Semester -I)

Time : 2Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in two to four sentences. **[16]**

a) Define international conflict.

b) Define national interest.

c) Define cultural integration.

d) What do you mean by Nation-State?

e) What do you mean by self determination?

f) What do you mean by changing world order?

g) Define conflict management.

h) What do you mean by power politics.

Q2) Answer in 8 to 10 sentences:(any two) **[8]**

a) Describe historical background of war studies .

b) Explain scope of conflict studies.

c) Discuss pacific methods of conflict settlement.

Q3) Write short notes on (any two): **[8]**

a) Problems of arms control.

b) Peace Research.

c) Conflict transformation across cultures.

Q4) Answer in 18 to 20 sentences (any one): **[8]**

a) Write a note on the problems of peace building in the 21th century.

b) Discuss evolution of war and peace studies.

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P.T.O.

Total No. of Questions :4]

SEAT No. :

P993

[Total No. of Pages :2

[5017] - 1026

S.Y.B.Sc.

DEFENCE AND STRATEGIC STUDIES

DSSY - 102 : Military Geography

(2013 Pattern) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 or 4 sentences each: **[16]**

a) Define "Military Geography".

b) State the meaning of grand strategy.

c) State any three resources of logistics.

d) What is the ideal period for High Altitude Warfare?

e) What do you mean by National Disaster?

f) Define 'Tactics'.

g) Why the study of desert warfare in necessary for us?

h) Define Logistics.

Q2) Answer in 8 or 10 sentences (Any Two): **[8]**

a) Explain any one Resource of logistics.

b) Write in brief the process of formation of grand strategy.

c) Write in brief logistics problems in high altitude warefare.

P.T.O.

Q3) Write short notes on (Any Two): **[8]**

a) Concept of Tactics.

b) Indias strategy during 1971 War.

c) Utility of Military Geography.

Q4) Answer in 16 or 20 sentences (Any one): **[8]**

a) Explain the use of environmental factor during war with examples.

b) Explain the various types of "Disasters".

Total No. of Questions : 4]

SEAT No. :

P 994

[Total No. of Pages :2

[5017] - 1027
S.Y.B.Sc.
DEFENCE AND STRATEGIC STUDIES
DSSY - 103: Contemporary Strategy
(2013 Pattern) (Semester - I) (Paper - III)

Time : 2 Hours] *[Max. Marks : 40*

Instructions : 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Q1) Answer in 2 to 4 sentences each : **[16]**

a) Define National Security.

b) What is meant by Nuclear Proliferation?

c) When and where world's first nuclear test was conducted?

d) Introduce about India's 2nd Nuclear Test.

e) What is Defensive Warfare?

f) What is meant by First Strike?

g) What is meant by Military Strategy?

h) What is meant by National Objectives?

Q2) Answer in 8 to 10 sentences each (any two) : **[8]**

a) How India's peninsular position contributes to its naval stategy?

b) Write about Pakistan Nuclear Strategy.

c) Explain about Air Strategy.

P.T.O.

Q3) Write short notes on (any two) : **[8]**

a) Military Capability.

b) Social Causes of War.

c) Development of Nuclear Strategy in the world.

Q4) Answer in 16 to 20 sentences (any one): **[8]**

a) Discuss about Theory of War.

b) "War now-a-days are more influenced by the Science of Economics than the Art of Strategy". Discuss this statement.

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Total No. of Questions : 4]

SEAT No. :

P995

[Total No. of Pages : 2

[5017]-1028
S.Y B.Sc.
ENVIRONMENTAL SCIENCES
ENV-201: Ecology and Ecosystem
(2013 Pattern)(New Course)(Semester-I) (Paper-I)

Time : 2Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following in 1-2 lines each. **[10]**

a) Explain the term' standing crop'.

b) Define autoginic sucession.

c) Write two examples of micro nutrients.

d) Define natality.

e) Explain the term stabilization of ecosystem.

f) Define energy flow.

g) What is gross primary productivity?

h) Give the meaning of 'ecotone'with example.

i) Define 'synecology'.

j) Give two examples of invasive plant-species.

Q2) Write a short note on (any two). **[10]**

a) Food web and ecosystem stability.

b) Prey-predator relationship.

c) Analytical characterstics of community.

P.T.O.

Q3) Answer any two from the following. **[10]**

a) Describe the population characteristics in detail.

b) Explain the mechanism of sucession.

c) Explain the methods of productivity measurements.

Q4) Attempt any one of the following question. **[10]**

a) Explain the carrying capacity of ecosystem with suitable example.

b) Explain the importance and characterstics of ecological niche.

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Total No. of Questions : 4]

SEAT No. :

P996

[Total No. of Pages : 2

[5017]-1029
S.Y.B.Sc.
ENVIRONMENTAL SCIENCE
ENV 202: Natural Resources Energy & Their Management
(2013 Pattern) (New course) (Semester - I) (Paper-II)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following1-2 lines: **[10]**

a) What do you mean by perpetual resources.

b) Define forest resources.

c) Who is the fatere of green Revolution in India.

d) Give two examples of soil conservation methods.

e) What do you mean by non conventional energy resources.

f) Define watershed.

g) Give the causes of Mal Nutrition.

h) What do you mean by Tidal energy.

i) Enlist causes of grass land degradation.

j) Soil salinity.

Q2) Write a short note on any two of the following. **[10]**

a) With suitable diagram explain working or solar cell .

b) Write a note on protected areas.

c) Give an account or types of Grasslands.

d) Define water Resources.Explain with diagram Rain water harvesting system.

P.T.O.

Q3) Answer any two of the following: **[10]**

a) Explain in detail classification of Energy Resources

b) Explain the effects of modern Agricultural practices on soil & underground water.

c) Define wildlife. Explain insitu conservation with suitable example.

d) Explain in detail importance, scope & significance of Resources.

Q4) Answer any one of the following: **[10]**

a) Give an brief account on Geothermal Energy.

b) What doyou mean by soil erosion. Explain on detail causes of soil erosion with suitable example.

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Total No. of Questions : 4]

SEAT No. :

P997

[Total No. of Pages : 6

[5017]-1030
S.Y.B.Sc.
ENGLISH (Optional)
Text : Literary Vistas
(2013Pattern - Revised) (Semester - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt any one of the following in about 100 words. **[5]**

i) How does C.Jones describe the planets that exist in our solar system?

ii) What are the important causes which help civilized humans to live longer than the uncivilized ones?

b) Attempt any one of the following in about 100 words. **[5]**

i) How has the development in the field of medical science helped civilization?

ii) What kind of energy is heat? How does heat energy help the world?

Q2) a) Attempt any one of the following in about 100 words. **[5]**

i) What are Jerzy kosinski's attitudes towards Television?

ii) How does the lives of greatmen affect those around us? Explain with reference to the poem 'A Psalm of Life'.

b) Attempt any one of the following in about 100 words. **[5]**

i) How does the poem 'Purdah' bring out the loss of self and objectification of girls?

ii) How does H.W. Longfellow compare our life to in 'A Psalm of Life'? Why?

P.T.O.

Q3) Attempt any five of the following. **[10]**

a) Complete the following sentences with an appropriate word chosen from those in brackets.

i) India is ____ for its classical forms of dance and music.

(Popular / famous)

ii) Have you seen the new ___ shop. (Stationary / Stationery).

b) Fill in the blanks with a word that means the opposite of the underlined word.

i) Reveal the evidence you have. Don't try to _____ it.

ii) What he is doing is not legal. It's ____ .

c) Combine words from A & B to form commonly used collocations.

	A	B
i)	commit	amendment
ii)	make	money
iii)	give	suicide
iv)	earn	clarification

d) Choose the right combinations of words.

i) heavy wind / strong wind.

ii) renew a contract / resign a contract.

e) Differentiate between the following pairs of words and make sentences.

i) Principle / Principal.

ii) Practise / Practice.

f) Add prefixes or suffixes to the words in the brackets and rewrite the sentences.

i) I think the test is scientifically _____ (sound).

ii) I have a _____ card (paid).

Q4) Attempt <u>any Ten</u> of the following. **[10]**

a) My brother is a writer, he ____ (write) novels.
(use correct form of the verb given in the bracket)

b) The doctor is busy now, but he ___ (see) you after an hour.
(use correct form of the verb given in the bracket)

c) The farmer finished his work in the field and went home.
(Change into a simple sentence)

d) Although we searched everywhere for the key. we could not find it.
(Change into a compound sentence)

e) Buy two shirts and get one free.
(Change into a complex sentence)

f) The house looks beautiful.
(Change into exclamatory sentence)

g) Hameed cycles to college everyday.
(Change into an interrogative sentence)

h) Could you, please, open the door!
(Change into an imperative sentence)

i) Kunal was not looking at us.
(Change into an affirmative sentence)

j) That is a wonderful performance.
(Begin the sentence with 'what' and rewrite)

k) Shah informed that his mother would leave the next day.
(Change into direct speech)

l) The film division is making a documentary on the white tigers.
(Change into passive voice)

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Total No. of Questions : 4]

P997

[5017]-1030
S.Y.B.Sc.
ENGLISH (Optional)
Text : Literary Vistas
(2013 Pattern - Old) (Semester - I)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt any one of the following in about 100 words. **[5]**

i) What interesting information about the stars do you get from the lesson, 'The Sun, the Planets and the Stars'?

ii) What are the important causes which help civilized humans to live longer than uncivilized ones?

b) Attempt any one of the following in about 100 words. **[5]**

i) What is the difference between a planet and a star?

ii) State how the pre-christian attitude to disease is contrasted with that of the scientist?

Q2) a) Attempt any one of the following in about 100 words. **[5]**

i) Explain the significance of the title 'A Cup of Tea'.

ii) Bring out the humour in the photographer's explanation of what he had done with regard to the features of the narrator.

b) Attempt any one of the following in about 100 words. **[5]**

i) How does Rosemary react to Philip's admiration of Miss Smith?

ii) What is Jerzy Kosinski's attitude towards television?

Q3) Attempt any Five of the following. **[10]**

a) Complete the following sentences with an appropriate word chosen from those in brackets.

i) India is ... for its classical forms of dance and music(popular, famous).

ii) He was busy ..... over the costs.(pouring, poring)

b) Combine words from A and B to form commonly used collocation.

	A	B
i)	grant	dream
ii)	cultural	course
iii)	fulfill	identity
iv)	crash	permission

c) Chose the right combinations of words.

i) have a conversation / make a conversation.

ii) hardly nothing / practically nothing.

d) Differentiate between the following pairs of words and make sentences.

i) practice, practise.

ii) effect, affect.

e) Pick out the closest antonym of the underlined words.

i) refute : praise, negate, accept.

ii) consent : resent, permit, forbid.

f) Add suffixes or prefixes to the words in the bracket to form meaningful sentence.

i) I just can't believe that it. The story is ..... (believable)

ii) She always wants to move she is ..... (rest)

Q4) Attempt any ten of the following. **[10]**

a) Computers ..... (store) large amounts of data.
(Use correct form of the verb given in the bracket)

b) Rajesh .... (drink) a liter of milk everyday.
(Use correct form of the verb given in the bracket)

c) Being ill, he didn't attend the party.
(Change into the compound sentence)

d) Farid found the house locked, so he waited outside for his friend.
(Change into simple sentence)

e) The squirrels hid the nuts in the hole at the bottom of the tree.
(Change into complex sentence)

f) We had an exciting trip.
(Change into exclamatory sentence)

g) Is water cold?
(Change into declarative sentence)

h) Nobody has fed the dogs today.
(Change into passive voice)

i) Could you water the plants please?
(Change into imperative sentence)

j) The nurse said the patient, "Has the pain become worse"?
(Change into reported speech)

k) The Moon can be seen through the clouds.
(Change into a negative sentence)

l) Kunal was not looking at us.
(Change into affirmative sentence)

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Total No. of Questions : 3] SEAT No. :

P998 [Total No. of Pages : 1

[5017] - 1031

S.Y. B.Sc. (Semester - I)

मराठी (MARATHI)

पाठ्यपुस्तक : विज्ञानसृष्टि

(2013 Pattern) (Theory)

वेळ : 2 तास] *[एकूण गुण : 40*

सूचना :- 1) सर्व प्रश्न सोडविणेअनिवार्य आहेत.

2) उजवीकडील अंक गुण दर्शवितात.

प्रश्न 1) खालीलपैकी कोणत्याही एका विषयावर 400 शब्दांत निबंध लिहा. **[10]**

अ) सुशिक्षितांची वैज्ञानिक दृष्टी?

ब) पुरोगामी महाराष्ट्र वास्तव की आभास?

क) मराठी राजभाषा. माझ्या अपेक्षा.

प्रश्न 2) पुढीलपैकी एका प्रश्नाचे उत्तर 300 शब्दांत लिहा. **[15]**

'भारतरत्न सी. एम. राव' या पाठाच्या आधारे त्यांच्या व्यक्तिमत्वाचा परिचय करून द्या.

किंवा

'खेळ आणि गारूडी' या कथेतून माधुरी शानभाग यांनी कोणता वैज्ञानिक संदेश दिला आहे?

प्रश्न 3) टिपा लिहा (कोणत्याही तीन) **[15]**

अ) विज्ञानसृष्टीचे वरदान

ब) वैज्ञानिक दृष्टीकोनाची वैशिष्ट्ये

क) भारतीय तंत्रज्ञान आणि उद्योग

ड) पर्यावरण आणि मानवी जीवन

ई) भारताची अंतराळ झेप व होमी भाभा यांचे योगदान

फ) पंजाबरावची व्यक्तिरेखा

Total No. of Questions : 3] SEAT No. :

P999 [Total No. of Pages : 2

[5017] - 1032
S.Y. B.Sc. (Semester - I)
हिन्दी (General)
(2013 पॅटर्न)

पाठ्यपुस्तकें : 1) भारती गद्य संग्रह
संपा. डॉ. मधु धवन
2) कवितायन
संपा. डॉ. भोलानाथ तिवारी

समय : 2 घंटे] *[पूर्णांक : 40*

सूचनाएँ :– *1) सभी प्रश्न अनिवार्य है।*
2) दाहिनी ओर लिखे अंक प्रश्न के पूर्णांक हैं।

प्रश्न 1) अ) निम्नलिखित में से किन्हीं छह वाक्यों को शुद्ध करके फिर से लिखिए। **[6]**

i) अच्छे विचारों को ग्रहण करो।

ii) मोहन ने पत्र को पढ़ा।

iii) हमारे को भी कुछ काम दो।

iv) सारे केले हाथ – हाथ बिक गए।

v) मैंने भी जाना है।

vi) कृपया खाना खालो।

vii) गांधी जी पक्के ईश्वर के भक्त थे।

viii) नदी में बाढ़ आया।

आ) निम्नलिखित अंग्रेजी अनुच्छेद का हिंदी में अनुवाद कीजिए। **[6]**

"Electrical energy in one of the useful form of energy which is widely used in day to day life of human being. A large number of electrical appliances which are easily operated with the help of switch or remote, provide easy way and comfort to human life."

P.T.O.

प्रश्न 2) अ) निम्नलिखित गद्य अवतरण की ससंदर्भ व्याख्या कीजिए। **[4]**

इसके भाग्य में पत्नी का सुख ही नहीं लिखा है। वर्ना पाँच ही वर्ष में यों दो – दो पत्नियाँ न छोड़ जाती।

अथवा

''आप लोगों में जो दब्बू, कायर, परिश्रमी और चरित्रहीन छात्र हैं, वे आगे चलकर राजपत्रित अधिकारी, वकील, डॉक्टर या शिक्षक बनेंगे।''

आ) निम्नलिखित पद्य अवतरण की ससंदर्भ व्याख्या कीजिए। **[4]**

जग पीड़ित है अति दुख से

जग पीड़ित रे अति सुख से।

मानव जग में बँट जावे

दुख सुख से औ सुख दुख से।।

प्रश्न 3) अ) निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। **[10]**

i) कवि दिनकर ने 'संस्कृति का बखान' किस तरह किया है?

ii) बैलून एंजियो प्लास्टी तकनीक विशद कीजिए।

iii) शोर पर नियंत्रण किस प्रकार पाया जाता है?

आ) निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए। **[10]**

i) कवि ने यशोधरा की मानसिक दशा का चित्रण किस प्रकार किया है।

ii) कवि दिनकर ने किस महासत्य का संकेत किया है?

iii) 'मेरी दुर्बलता को दुलराने वाले न मिलेंगे' – ऐसा कवि ने क्यों कहा है?

Total No. of Questions : 4] SEAT No. :

P1000 [Total No. of Pages : 2

[5017] - 1033
S.Y. B.Sc. (Semester - I)
संस्कृत (Sanskrit)
गीर्वाणभारती (Gīrvāṇabhārati)
(2013 Pattern)

Time : 2 Hours] *[Max. Marks :40*

Instructions :1) ***All questions are compulsory.***

सूचना : ***सर्व प्रश्न अनिवार्य आहेत.***

2) ***Figures to the right indicate full marks.***

उजवीकडील अंक पूर्ण गुण दर्शवितात.

Q1) Write short answers in 2 - 4 lines on the following questions : **[16]**

पुढील प्रश्नांची 2 - 4 ओळीत उत्तरे लिहा.

a) Which 3 concepts are discussed inUpanishadas? What is the aim of the Upanisadas?

उपनिषदांमध्ये कोणत्या तीन संकल्पनांचा विचार केला आहे? आणि उपनिषदांचे उद्दिष्ट कोणते?

b) Which are the चतष्कला of अनन्तवान् पाद?

अनन्तवान पादाच्या चतुष्कला कोणत्या?

c) State the names of the friends of शकुंतला

शकुंतलेच्या मैत्रिणींची नावे लिहा.

d) State the any 4 types of Bhakti.

भक्तीचे कोणतेही चार प्रकार लिहा.

e) Which fragrant things imagined by Śaṅkarācārya in Śivamanasa pūja?

शंकराचार्यांनी शिवमानस पूजेसाठी कोणती सुगंधी साधने कल्पिली आहेत?

f) What is the purpose of the lesson उपदेशप्रबन्धः

'उपदेशप्रबन्धः' या ग्रंथाचे प्रयोजन कोणते?

g) Explain 'जनापवादात् भजेत् भीतिम्'

'जनापवादात् भजेत् भीतिम्' स्पष्ट करा.

h) From which text च्यवनभार्गवकथा is taken?

च्यवनभर्गवकथा कोणत्या ग्रंथातून घेतली आहे?

P.T.O.

Q2) Write short notes (any two) : **[8]**

संक्षिप्त टीपा लिहा. (कोणत्याही दोन)

a) **सुकन्या**

b) **उपनिषद्**

c) **सेयं याति शकुन्तला पतिगृहम्।**

Q3) Write short notes (any two) : **[8]**

संक्षिप्त टीपा लिहा. (कोणत्याही दोन)

a) **मानसपूजा**

b) **शतोपदेशप्रबन्धः**

c) **सिंहिका**

Q4) Write any one of the following questions in 16-20 lines. **[8]**

पुढीलपैकी कोणत्याही एका प्रश्नाचे उत्तर 16-20 ओळीत लिहा.

a) Critically appriciate **सत्यकामजाबाल कथा**

सत्यकामजाबाल कथेचे रसग्रहण करा.

b) Character sketch of **हनुमान्** in **'छायाग्रहिसत्वम्'**

'छायाग्रहिसत्वम्' या पाठातील हनुमानाचे व्यक्तिचित्रण करा.

Total No. of Questions : 4]

P3259

SEAT No. :

[Total No. of Pages : 2

[5017]-1034

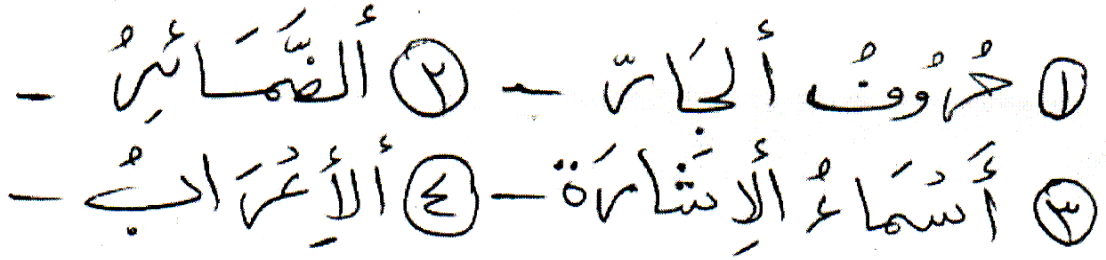
S.Y. B.Sc. (Semester - I)

ARABIC FUNCTIONAL

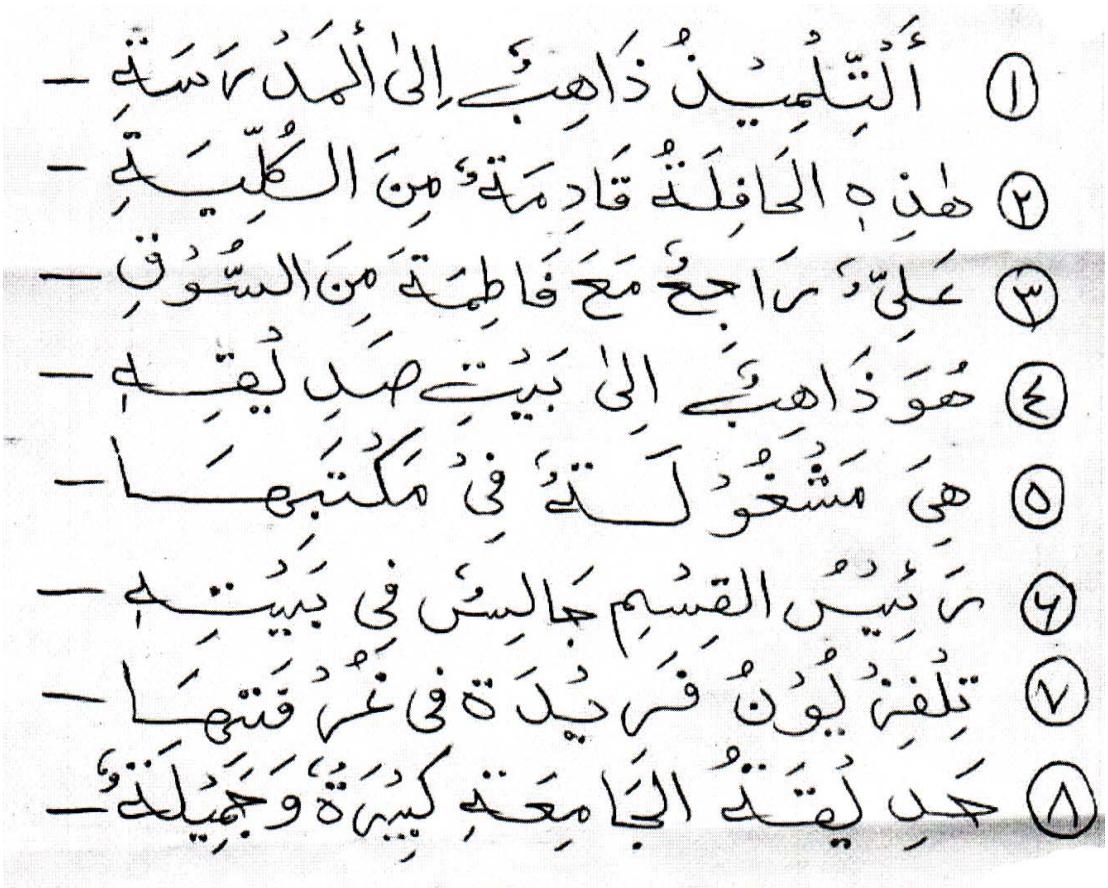
(2013 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Q1) Define with examples any two of the following topics: **[10]**



Q2) Translate into English any five the following sentences **[10]**



P.T.O.

Q3) Translate into Arabic any five of the following sentences: **[10]**

a) There is a newspaper on the table.

b) On the window there is a curtain.

c) The chair is comfortable.

d) That bus is going to the university.

e) In the fridge there is an apple.

f) His office is far from his Home.

g) She is coming from the School.

h) My father is working in his room.

Q4) Write in Arabic any ten of the following terminologies: **[10]**

a) Computer

b) Radiation

c) Mercury

d) Axis

e) Voltage

f) Astrology

g) Heat

h) Orbit

i) Botany

j) Degree

k) Liquid

l) Motion

m) Coolness

n) Solid

o) Physics

p) Matter.

Total No. of Questions : 4]

SEAT No. :

P1001

[Total No. of Pages : 1

[5017]-1035
S.Y.B.Sc.
URDU GENERAL (UR G2)
(New Pattern) (Paper - II) (Semester - I) (2013 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

ہدایات: ۱) تمام سوالات لازمی ہیں۔

۲) بائیں جانب درج نمبرات مارکس ہیں.

سوال نمبر۱: علامہ اقبالؔ کی حیات وشخصیت کا جائزہ لیجیے۔ (10)

یا

علامہ اقبالؔ کی شاعری کی خصوصیات بیان کیجئے۔

سوال نمبر۲: بانگ درا کی خصوصیات بیان کیجیے۔ (10)

یا

اردو نظم کے آغاز وارتقاء کا جائزہ لیجئے۔

سوال نمبر۳: کسی ایک نظم کا مرکزی خیال بیان کرتے ہوئے تشریح کیجیے۔ (10)

۱۔ ہمالہ ۲۔ نیا شوالہ ۳۔ پرندے کی فریاد

سوال نمبر۴: مندرجہ ذیل اشعار میں سے کوئی پانچ اشعار کی تشریح بحوالۂ متن کیجیے۔ (10)

۱۔ برف نے باندھی ہے دستار فضیلت تیرے سر — خندہ زن ہے جو کلاہِ مہر عالم تاب پر

۲۔ تو طلب خو ہے، تو میرا بھی یہی دستور ہے — چاندنی ہے نور تیرا، عشق میرا نور ہے

۳۔ آتی نہیں صدائیں اس کی میرے قفس میں — ہوتی میری رہائی اے کاش میرے بس میں

۴۔ میری قسمت میں ہے ہر روز کا مرنا جینا — ساقی موت کے ہاتھوں سے صبوحی پینا

۵۔ آ غیریت کے پردے اک بار پھر اٹھا دیں — بچھڑوں کو پھر ملا دیں، نقش دوئی مٹا دیں

۶۔ خاک میں مل کے حیاتِ ابدی پا جاؤں — عشق کا سوز زمانے کو دکھاتا جاؤں

۷۔ جو میری ہستی کا مقصد ہے مجھے معلوم ہے — یہ چمک وہ ہے جبیں جس سے تیری محروم ہے

☛ ☛ ☛

Total No. of Questions : 4]

SEAT No. :

P1002

[Total No. of Pages : 2

[5017]-1036
S.Y.B.Sc.(Vocational)
INDUSTRIAL CHEMISTRY
VOC-211:Utilities, Unit Operations and Process Instrumentation
(2013 Pattern) (Semester-I) (Paper-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams should be draw wherever necessary.***

Q1) Answer the following . **[16]**

a) Convert 100kg m^{-3} into CGS system.

b) Define bound water.

c) Convert 50^{o}F into ^{o}c.

d) What is secondary nucleation?

e) Write four uses of steam.

f) Convert 15 psi into torr.

g) Write the expression for Reynold number.

h) State Peltiev effect.

Q2) Answer any TWO of the following. **[8]**

a) Write a short note on Nutriex filters.

b) Describe the role of thermocouples in temperature measurements.

c) Discuss the advantages of inclined manometer.

P.T.O.

Q3) Answer any TWO of the following: **[8]**

a) Explain with a diagram the principle and working of ultrasonic flow meter.

b) Describe the working of a pirani gauge.

c) Write a note on spray dryers.

Q4) Describe Lancashire Boiles with neat diagram. **[8]**

OR

Explain the different techniques of evaporation.

✓ ✓ ✓

Total No. of Questions : 4]

SEAT No. :

P1003

[Total No. of Pages : 2

[5017]-1037
S.Y.B.Sc. (Vocational)
BIOTECHNOLOGY-I
VOC-Biotech-211: Cell and Molecular Biology and Microbal Genetics
(2013Pattern)(Semester-I) (Paper-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Neat diagram must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) Answer each of the following in 1-2 lines: **[10]**

a) Define Neoplasia.

b) Give two functions of Golgi Complex.

c) What is subcellular fractionation?

d) Enlist the components of extracellular matrix.

e) What is autocrine signaling?

f) Define Gene

g) Give the structure of initiation site in prokaryotic DNA.

h) What is the function of ligase enyzme?

i) Name the signal molecule which transport the proteins to endoplasmic reticulum.

j) Give the role of chromatin fibers in chromosome structure.

Q2) Write short notes on any Two of the following: **[10]**

a) Active transport.

b) Desmosomes.

c) Excision repair.

P.T.O.

Q3) Attempt any Two of the following: **[10]**

a) Write a note on salient features of prokaryotic genome structure.

b) What is post translational modification of proteins? Explain with suitable examples.

c) Explain the structure and function of endoplasmic reticulum.

Q4) What is DNA replication? Explain in detail the prokaryotic DNA replication process. **[10]**

OR

What is cell signaling? Explain in detail the 'G' protein coupled cell signaling.

✓ ✓ ✓

Total No. of Questions :4]

SEAT No. :

P2203

[Total No. of Pages :2

[5017]-1038
S.Y.B.Sc. (Vocational)
PHOTOGRAPHY & AUDIO-VISUAL PRODUCTION
Still Photography, Processing & Printing -I
(2013 Pattern) (Semester - I) (Paper - III)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat and labeled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following in short: **[16]**

a) Explain how depth of field is useful for a photographer.

b) You have a red filter on your camera lens. How much light will you lose? What will be the loss with a yellow filter instead of the red filter? Explain.

c) A lens is specified as 18-55 mm, 3.6-4.5. What does it mean?

d) Write down two advantages and two disadvantages of a Telephoto lens.

e) Slow and fast shutter speeds are relative terms. Explain.

f) What does ISO stand for? How important is it in digital photography?

g) Explain the term: Flash Synchronization.

h) Mention two important drawbacks of a wide-angle lens.

Q2) Answer ANY TWO of the following: **[8]**

a) Define the angle of view of a camera lens and classify the camera lenses accordingly. Give suitable examples.

b) Discuss the use of skylight filter in photography.

c) Compare the 'Hard' and 'Soft' light used in a photographic lighting setup.

P.T.O.

Q3) Answer ANY TWO of the following: **[8]**

a) Draw a flash curve and discuss the informaiton it provides.

b) Draw a suitable ray diagram and explain the concept of magnification of a photographic image. Explain how life-size magnification can be achieved.

c) Explain the terms: Key-light, Fill-light and Back-light used in a typical three light set-up. Give one important difference amongst them.

Q4) Write short notes on ANY TWO of the following: **[8]**

a) Use of polarizing filter in photography.

b) Hyper focal distance.

c) Zoom lens.

EEE

Total No. of Questions : 4]

P3259

SEAT No. :

[Total No. of Pages : 2

[5017]-1034

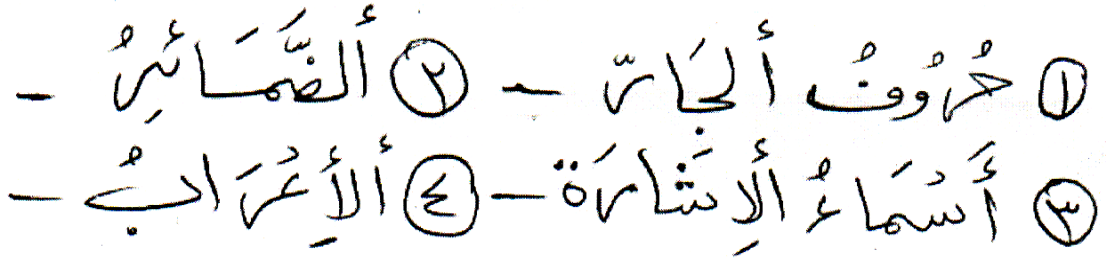
S.Y. B.Sc. (Semester - I)

ARABIC FUNCTIONAL

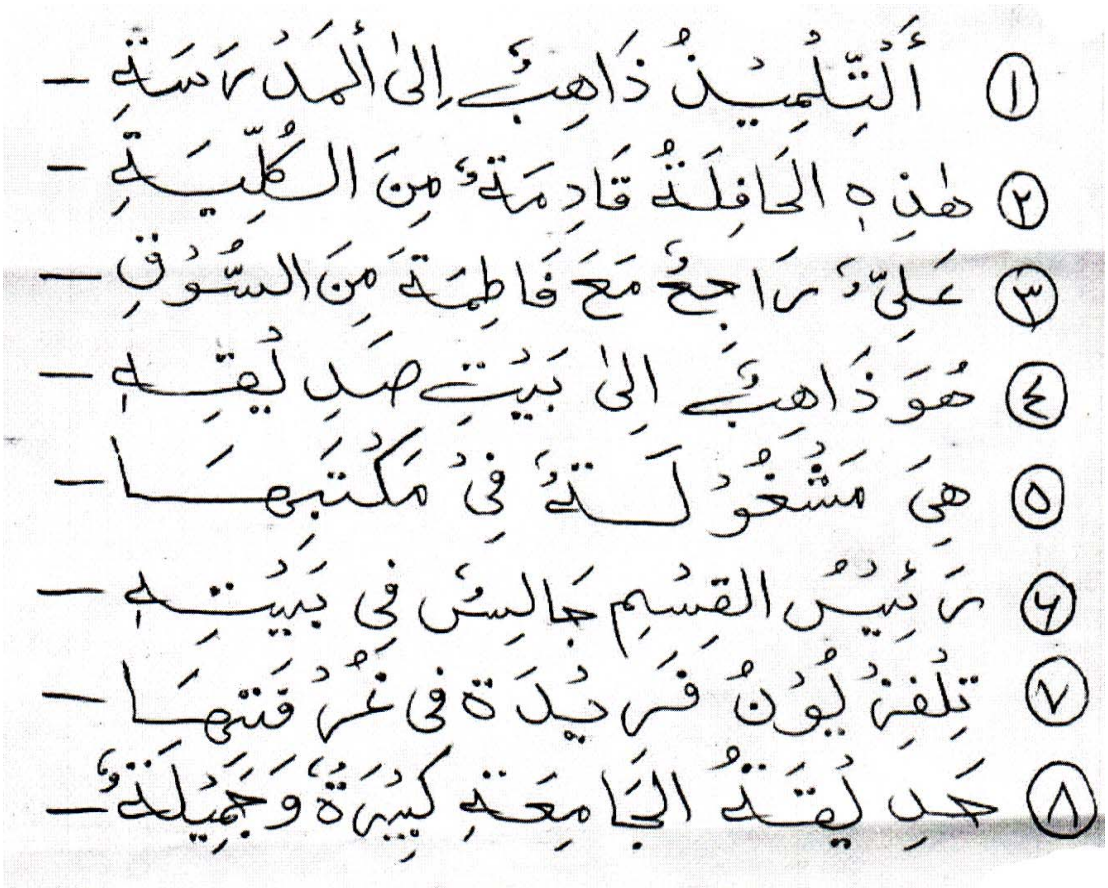
(2013 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Q1) Define with examples any two of the following topics: **[10]**



Q2) Translate into English any five the following sentences **[10]**



P.T.O.

Q3) Translate into Arabic any five of the following sentences: **[10]**

a) There is a newspaper on the table.

b) On the window there is a curtain.

c) The chair is comfortable.

d) That bus is going to the university.

e) In the fridge there is an apple.

f) His office is far from his Home.

g) She is coming from the School.

h) My father is working in his room.

Q4) Write in Arabic any ten of the following terminologies: **[10]**

a) Computer

b) Radiation

c) Mercury

d) Axis

e) Voltage

f) Astrology

g) Heat

h) Orbit

i) Botany

j) Degree

k) Liquid

l) Motion

m) Coolness

n) Solid

o) Physics

p) Matter.

Total No. of Questions : 4]

SEAT No. :

P1005

[Total No. of Pages : 2

[5017]-1040

S.Y.B.Sc. (Vocational)

COMPUTER HARDWARE & NETWORK ADMINISTRATION

Microprocessor & Interfacing Techniques

(Paper-I) (2013 Pattern)(Semester-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt the following: **[4×1=4]**

i) Define resolution.

ii) Which function of the DOS INT 21H is used to accept a character from Keyboard?

iii) List various software development tools available.

iv) Define term transducer.

b) Attempt the following: **[4×2=8]**

i) State any two features of 8086 processor.

ii) What is a sensor? List different sensors you know.

iii) What do you mean by Dual Core processor?

iv) List various Bus Architectures you know.

Q2) Attempt any TWO of the following: **[2×4=8]**

a) What are the main features of Core i3 processors?

b) What is ADC? Explain working of any one type of ADC?

c) Write a note on Minimum and Maximum mode configuration of 8086 processor.

P.T.O.

Q3) Attempt any TWO of the following: **[2×4=8]**

a) List non Intel processors and explain features of any one non Intel processor.

b) What is interrupt? Explain software interrupts in brief.

c) Write a short note on DRAM.

Q4) Attempt any TWO of the following: **[2×6=12]**

a) What is the function of programmable parallel port? With a neat diagram explain keyboard interface with Microprocessor.

b) What is DAC? State different types of DAC. Explain working of any one type of DAC.

c) What is function of DMA? Explain DMA Controller operation with a neat diagram.

✓ ✓ ✓

Total No. of Questions : 4]

SEAT No. :

P1006

[Total No. of Pages : 2

[5017]-1041
S.Y.B.Sc.(Vocational)
SEED TECHNOLOGY - I
VOC-ST-211: Hybrid Seed Production
(2013 Pattern) (Semester-I) (Paper-I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Neat diagrams must be drawn wherever necessary.*

Q1) Attempt the following: **[10]**

a) Define Heterosis.

b) What are pollen shedders?

c) Define variety.

d) What are game to cides?

e) Define pollen viability.

f) Write the isolation distance adopted for Maize hybrid?

g) What is roughing?

h) Enlist kinds of self-incompatibility.

i) What is cytoplosmic male sterility?

j) Define in breeding depression.

Q2) Answer any TWO of the following. **[10]**

a) Explain the genetic basis of heterosis.

b) Comment on structure of carpel.

c) Explain Genetic male sterility.

P.T.O.

Q3) Write notes on (any TWO): **[10]**

a) Types of Apomixes.

b) Manual Emasculation.

c) Selection of site for seed production.

Q4) Give detail procedure for hybrid seed production in cotton. **[10]**

OR

Give detail procedure for hybrid seed production in Bajara.

✓ ✓ ✓

Total No. of Questions : 4]

SEAT No. :

P1007

[Total No. of Pages : 2

[5017]-1042
S.Y.B.Sc. (Vocational)
INDUSTRIAL MICROBIOLOGY - I
VOC-IND-MIC-211:Bioreactors-Designs and Operation
(2013-Pattern) (Paper-I)(Semester - I) (Theory)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Draw neat labelled diagrams wherever necessary.***
5) ***Use of scientific calculators is allowed.***

Q1) Answer each Sub-question in one or two lines; Fill in the blanks; State whether the statement is true or false. **[10]**

a) Name 3 materials used in construction of fermenter.

b) Give the use of rotameters in a fermenter.

c) In fermenter the top portion left without broth is called as_____.

d) How amino acid solutions are sterilized to use as fermentation media.

e) Name the device used for regulation and control the flow liquids and gases.

f) Define - Immobilization of cells.

g) State why a fibrous filter is not an “absolute” filter.

h) What is steam trap?

i) Foam is formed when high protein containing media are used during fermentation. (True False) .

j) Overheating of fermenter during fermentation is controlled by_____

Q2) Answer any Two of the following. **[10]**

a) Explain why, in most fermentation, batch sterilization is preferred over continuous sterilization.

b) With the help of a diagram, explain the difference in flow patterns provided by a turbine impeller and a propeller impeller.

c) Diagrammatically explain any reactor used for immobilized cell.

P.T.O.

Q3) Answer any Two of the following: **[10]**

a) How is substrate concentration monitored during fermentation?

b) Write short note on "Time course of a fermentation process".

c) How is online data acquisition and analysis done?

Q4) Answer any One of the following:

a) Explain the various methods of sterilization used in the fermentation industry. **[10]**

b) Draw and compare the profiles of bacterial growth in batch, feb-batch and continuous culture fermentation processes.

✓ ✓ ✓

Total No. of Questions :4]

SEAT No. :

P1008

[Total No. of Pages :2

[5017] - 1043

S.Y.B.Sc. (Vocational)

INDUSTRIAL CHEMISTRY - II

VOC - 212 : Inorganic Process Industries

(2013 Pattern) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams should be drawn wherever necessary.***

Q1) Answer the following: **[16]**

a) What is corrosion fatigue?

b) Define Glazing.

c) Write two uses of ceramics.

d) What is low setting cement?

e) What are white wares?

f) What is the role of gypsum as an additive in cement.

g) What is pyrex glass?

h) What is calcareous material?

Q2) Answer any two of the following: **[8]**

a) Describe ceramic composites in detail.

b) Describe the process of silvering in glass industry.

c) Write advantages of electrochemical series.

P.T.O.

Q3) Answer any two of the following: **[8]**

a) Describe the dry process in the manufacture of ordinary cement.

b) Write a short note on structural clay products.

c) Describe slip casting process in ceramics

Q4) Explain the steps involved in fabrication of a glass article. **[8]**

OR

Write four uses of cement and explain coloured cement.

Total No. of Questions :4]

SEAT No. :

P1009

[Total No. of Pages :2

[5017] - 1044

S.Y.B.Sc. (Vocational)

BIOTECHNOLOGY

rDNA Technology

(2013 Pattern) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat and labelled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following: **[10]**

a) Enlist the tools used in rDNA technology.

b) What are DNA modifying enzymes? Give example.

c) What are shuffle vectors?

d) What is transfection.

e) What is southern blotting.

f) Give any two important applications of rDNA technology.

g) Give examples of phage cloning vectors.

h) What are the types of restriction enzymes.

i) Mention the steps involved in PCR.

j) Define photomics.

Q2) Write short notes on any two of the following: **[10]**

a) Genomics.

b) Gene library.

c) Site - directed mutagenesis.

P.T.O.

Q3) Answer any two of the following: **[10]**

a) Describe the enzymetic method of DNA sequencing.

b) What is PCR? Mention the different applications of PCR.

c) Describe the process of Northern blotting.

Q4) Describe in detail BAC and YAC as doing vectors. **[10]**

OR

What is gene cloing. Give an outline to construct a recombinent DNA molecule. Add a note on applications of gene cloing.

Total No. of Questions :4]

SEAT No. :

P2204

[Total No. of Pages :2

[5017]-1045

S.Y.B.Sc. (Vocational)

PHOTOGRAPHY & AUDIO-VISUAL PRODUCTION-II

Fundamentals of Acoustics and Sound for Media

(2008 Pattern) (Semester - I)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat and labelled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt ALL of the following:

a) Mention four requisites of a good microphone. **[2]**

b) What is an audio delayer? **[2]**

c) Define the Reverberation time. **[2]**

d) Draw a neat and labelled diagram of a basic crossover network. **[2]**

e) What is a microphone? Mention any two types of special microphones. **[2]**

Q2) Attempt ANY TWO of the following:

a) Using a neat and labelled diagram, explain the functioning of bass reflex enclosure with port using suitable circuit. **[5]**

b) Explain the necessity of cross-over networks. Design a crossover network to give 12 dB per octave attenuation for tweeter and woofer for critical frequency of 1 kHz. Loudspeaker resistance is 16Ω. **[5]**

c) What are the characteristics of a good loudspeaker? Why efficiency of indirect radiating loudspeaker is higher than direct radiating type? **[5]**

P.T.O.

Q3) Attempt ANY TWO of the following:

a) Calculate the reverberation time for a hall whose length, width and height are 50 m, 30 m and 5 m, respectively and the average absorption coefficient is 0.161. **[5]**

b) With the help of a neat sketch, explain the principle of working of a ribbon microphone. Why is it known as velocity microphone? **[5]**

c) Write a short note on the characteristics of human ear. **[5]**

Q4) Attempt ANY TWO of the following:

a) Draw a neat and labelled block diagram to explain the construction and working of a magnetic sound recording system. **[5]**

b) With the help of a neat sketch, explain the construction and functioning of electrodynamic type loudspeaker. What are its advantages and disadvantages relative to permanent magnet type speaker? **[5]**

c) Sound intensity at 1 meter from a loudspeaker is 200 mW/m^2. The audio power fed to the loudspeaker is 50 W. Calculate the efficiency of the loudspeaker. **[5]**

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Total No. of Questions :4]

SEAT No. :

P1010

[Total No. of Pages :2

[5017] - 1046

S.Y.B.Sc. (Vocational)

ELECTRONIC EQUIPMENT MAINTENANCE - II (EEM)

VOC - EEM - 212 : Audio Video & Office Equipment - A

(2013 Pattern) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Answer the following:

a) FM is better than AM. Comment. **[1]**

b) How is audio signal recorded on tape? **[1]**

c) What is Blue - Ray disc? **[1]**

d) What is infotainment? **[1]**

e) Explain the terms : SDTV, HDTV, CATV, DTH. **[2]**

f) What is CCTV? Give its two application. **[2]**

g) How does remote control work? **[2]**

h) What is PAL-B Standard? **[2]**

Q2) Attempt any <u>two</u> of the following:

a) What is home theatre? Explain its working. How is it specified? **[4]**

b) Draw a composite video signal. Explain the function of different pulses in it. **[4]**

c) Write a note on 'VSB' transmission in TV. Also give a brief account of TV channels in India. **[4]**

P.T.O.

Q3) Attempt any <u>two</u> of the following:

a) What is PA system? Draw its block diagram. Explain its working. **[4]**

b) What are the basic building blocks of AM receiver? Draw its block diagram. Explain its funning. **[4]**

c) Draw the block diagram of LCD TV/monitor. Compare it with plasma TV/CRT monitor. **[4]**

Q4) a) Draw a neat block diagram of B/W TV. Also explain the function of each block. **[6]**

b) What is CATV? Draw its block diagram. Give its applications. **[6]**

OR

a) Give different audio file formats used in AV systems. Explain any one of them in details. **[6]**

b) Explain the recording mechanism in a CD player. Compare it with tape recorder Blue - Ray player. **[6]**

Total No. of Questions : 4]

SEAT No. :

P 1011

[Total No. of Pages :2

[5017] - 1047

S.Y.B.Sc. (Vocational)

COMPUTER HARDWARE & NETWORK ADMINISTRATION

Computer System Management

(New Course) (2013 Pattern) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt the following : **[4 × 1 = 4]**

i) What is the function of UPS?

ii) List various display adaptor cards used in PC.

iii) What is the importance of fan in your PC?

iv) List various diagnostic utilities used in computer system.

b) Attempt the following : **[4 × 2 = 8]**

i) What is the effect of electro-static discharge?

ii) List various startup problems with modern PC.

iii) What is booting?

iv) What do you mean by repair generated failures?

Q2) Attempt any two of the following : **[2x4=8]**

a) Explain the effect of dust as contributors to system failures?

b) Write a short note on preventive maintenance of a printer.

c) What are causes for incidents and disaster? Explain the importance of recovery plan?

P.T.O.

Q3) Attempt any two of the following : **[2×4=8]**

a) What is noise? What are effects of noise on a computer system?

b) Write a short note on disk drive failure.

c) Explain keyboard and mouse problems and the measures for their troubleshooting.

Q4) Attempt any two of the following : **[2×6=12]**

a) Explain in brief the preventive maintenance of UPS and Power supply of a PC.

b) List various electronic equipments used in troubleshooting. State and explain general rules for troubleshooting of computer.

c) What do you mean by preventive maintenance? Explain in brief the hardware and software preventive methods.

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Total No. of Questions :4]

SEAT No. :

P1012

[Total No. of Pages :2

[5017] - 1048

S.Y.B.Sc. (Vocational)

SEED TECHNOLOGY - II

VOC - ST - 212 : Seed Testing

(2013 Pattern) (New) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following: **[10]**

a) Define Seed Testing.

b) Give any one general principle of sampling.

c) Define Heterogeneity test.

d) What is seed vigour?

e) Give any one role of offical seed Analysis.

f) Define other crop seed component of physical parity analysis.

g) What is seedling evaluation?

h) Define official sample?

i) What is Normal seedling?

j) Define moisture testing.

Q2) Answer any two of the following: **[10]**

a) Give procedure of registration of samples.

b) Write general principles of seed sampling.

c) Explain the role of state seed testing laboratory.

P.T.O.

Q3) Write notes on (any two): **[10]**

a) Seed vigour testing.

b) ODY test.

c) Moisture meter.

Q4) Explain in detail, the general principles and requirements of seed germination testing. **[10]**

OR

Explain in detail Heterogeneity test. **[10]**

Total No. of Questions : 4]

SEAT No. :

P 1013

[Total No. of Pages :2

[5017] - 1049
S.Y.B.Sc. (Vocational)
INDUSTRIAL MICROBIOLOGY - II
VOC- IND-MIC- 212 : Screening and Process Optimization
(2013 Pattern) (Theory) (Semester - I) (Paper - II)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Draw neat labeled diagrams wherever necessary.***
5) ***Use of scientific calculators is allowed.***

Q1) Answer each sub-question in one or two lines : **[10]**

a) Define 'Feedback inhibition'.

b) State an application of replica plate technique.

c) What is lyophilization?

d) Define 'Mutant'.

e) Enlist any two nitrogen sources used in fermentation industry.

f) Define 'Inducer'.

g) What is cell permeability?

h) What is Del factor?

i) Enlist any two antifoams used in fermentation industry.

j) Name two industrially important bacteria..

Q2) Answer any Two of the following : **[10]**

a) Discuss the process of function based targeted screening

b) Design a flow chart to explain inoculum build-up for a specific production process

c) Justify, 'Response surface methodology is an important tool for optimization of fermentation processes'.

P.T.O.

Q3) Write a short note on any Two of the following : **[10]**

a) Strain improvement.

b) Plackett-burman design.

c) Carbon sources in fermentation media.

Q4) Answer any One of the following : **[10]**

a) Discuss various modes of feedback regulation with the help of suitable examples.

b) Enlist various methods used for isolation of auxotrophic mutant. Explain any two methods in detail.

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