ET - II

Marks 50 Electronics PII Annual Exam -16 3 Hours

Note: i] All questions are compulsory.
ii] Figures to the right indicate full marks.
iii] Draw **neat diagram** wherever necessary.
iv]Use of Log table is allowed. Calculator is not allowed

Q.1 A Select the correct alternative and rewrite the following sub questions. [04]

i) Intrinsic standoff ratio in UJT is represented by the Greek letter_____

a) alpha b) beta c) theta d) eata

ii) _____is Bipolar device.
a) BJT b) Diac c) SCR d) All of these three.

iii) In Zener diode voltage regulator , Resistor is connected in/towards _____

a) Series b) Parallel c) both series & parallel d) ground

iv) Second letter 'F" in Transistor numbering system indicates _____ Amplifier

a) Audio frequency b) Power c) High frequency d) none of these.

Q.1 B Compare CB, CE and CC configurations of Bipolar junction Transistor. [06]

Q.2 Attempt any Two of the following. [10]
i) Write a note on LED

ii) Explain working of Zener diode. Write the use of Zener diode.

iii) Explain how to draw D.C Load line on o/p characteristics of Transistor.

Q.3) Attempt **any Two** of the following [10]
i) Compare LED with Photo diode,

ii) Write a note on Voltage divider bias.

iii) Explain construction and working of UJT,

Q.4) Attempt **any Two** of the following [10]

i) Explain Avalanche and Zener effect.

ii) Write a note on photo diode.

iii) How Transistor can be used as a electronic switch.

Q.5) Attempt **any Two** of the following [10]

i) Draw characteristics of UJT and explain it.

ii) Explain fixed bias. Write its disadvantages;

iii) Explain BJT testing.

ALL THE BEST

Comp - I

102

SUB: COMPUTER SCIENCE **CLASS: XI**

Time: 1 Hr 30 mins **MAX. MARKS: 50**

NOTE: 1. All questions are compulsory.
2. Draw neat diagrams wherever necessary.
3. Figures to the right indicate full marks
4. Use of any type of calculator is not allowed
5. Due credit will be given for the programs with appropriate comments

---

Q. 1. (A) Select the correct alternative and rewrite the following: **5**

(a) C++ is _____.

(i) Low level language (ii) assembly language (iii) object oriented language (iv) None of these

(b) In C++ , >> is _____ operator.

(i)Insertion (ii) Assignment (iii) Extraction (iv) None

c) $(412)_8$ - $(121)_{10}$ is _____ in binary number system

(i) 100111011 (ii) 1001010101 (iii) 000101001 (iv) None of these

d) The 2's Complement of 0101001001 is _____.

(i) 1010110111 (ii) 1001100111 (iii) 1010110110 (iv) None of these

e) $(1010)_2$ / $(0101)_2$ is _____.

(i) 0001 (ii) 0010 (iii) 0100 (iv) None of these

(B) Answer any two of the following: **10**

1. Write a Program in C++ to check whether the number 457 is a Palindrome or not.
2. Write an Algorithm for Addition of Set of Numbers.
3. Write a Program in C++ to check whether the sides of the triangle entered by the user belong to a right angle triangle.

Q. 2. Solve any five of the following: **15**

1. $(1001111.111010011)_2 = (\quad)_{10}$
2. $(145)_8 - (45)_{10} = (\quad)_{10}$
3. $(ABF)_{16} \times (1011)_2 = (\quad)_8$
4. $(101111110.101101)_2 = (\quad)_{10}$
5. $(7BA.56)_{16} + (165)_8 = (\quad)_{10}$
6. $(567.43)_8 / (111)_2 = (\quad)_{16}$

Q. 3. Answer the following: **20**

1. Explain If – Else – If in Visual Basic.
2. What are increment and decrement operators? Explain with examples.
3. Write a Program in C++ to check whether the entered character is a Vowel or Not.
4. Explain Networking. Define the terms, WWW, FTP and HTTPs.
5. Write a Shortnote on ToolBox and Properties Windows in Visual Basic.

****

comp-II

SUB: COMPUTER SCIENCE - II **CLASS: XI**

MAX. MARKS: 50

NOTE: 1. All questions are compulsory.
2. Draw neat diagrams wherever necessary.
3. Figures to the right indicate full marks
4. Use of any type of calculator is not allowed
5. Due credit will be given for the programs with appropriate comments

---

Q. 1. (A) Select the correct alternative and rewrite the following: **5**

(a) The horizontal scan frequency for CGA is _____.

(i) 15.4 KHz (ii) 15.8 Hz (iii) 21.8 KHz (iv) None of these

(b) The data bus of Pentium processor is _____bits.

(i)16 (ii) 32 (iii) 64 (iv) 8

(c) Super VGA offers resolution upto _____.

(i) 640 X 200 (ii) 640 X 480 (iii) 1024 X768 (iv) None of these

d) A Capacitor offers _____ impedence to ac.

(i) low (ii) high (iii) equal (iv) None of these

e) In electronic circuits, resistances are used to control the _____.

(i)voltage (ii) current (iii)Inductance (iv) None of these

(B) Answer any two of the following: **10**

1. Explain different types of Capacitors.
2. Draw VI characteristics of PN Junction Diode.
3. What are the components of PC ? Explain it.

Q. 2. Answer any five of the following: **15**

1. What is video Memory ?
2. Write Short note on Hard disk and Pen Drives.
3. What is full adder? Why is it called so?
4. Explain Modem.
5. Give Color Code for Resistors.

Q. 3. Answer the following: **20**

1. What are Transistors ? Explain its types.
2. Explain working of KeyBoard.
3. Write a short note on LED.
4. What are Interrupts? Explain.
5. Explain PN Junction with Reversed Bias.

****

MCVC-I

FINAL EXAMINATION (M.C.V.C.) FEBUARY 2017
ELECTRONICS TECHNOLOGY PAPER – 1 MAXIMUM MARKS : 80
BASIC ELECTRICITY DURATION : 3 HOURS

Q.1) A) Fill in the blanks from the options given. (5M)

i) In magnets_____ poles repel each other and _____ attract each other. (unlike / Like)

ii) The property of a substance getting magnetism due to nearness of a magnet is called _____ (magnetic induction / magnetic flux)

iii) _____ can pass through air (Flux / Electric current)

iv) Toroidal magnets are used in _____ (speakers/ galvanometers)

Q.1) B) Match the following. (5M)

A	B
1) Flux	a) Reciprocal of reluctance
2) Permeance	b) Ampere - turn
3) Magneto motive force	c) Weber
4) Flux density	d) Ampere per meter square
5) Current density	e) weber per meter square

20

Q.1) C) State whether true or false (5M)

1) Electric current cannot pass through air.
2) The property of a coil to give opposition to change in current is called inductance.
3) The MCG has temporary magnets.
4) The basic movements of DC ammeter is a PMMC galvanometer.
5) Galvanometer is voltage sensitive device.

**

Q.2) Draw the following 5 wave forms : (15M)

1) Rectangular wave.
2) Square wave.
3) Saw tooth wave.
4) Complex wave.

2

P.T.O

5) triangular wave.

Q.3) Answer any five questions. (5 marks each)

1) Draw the internal structure of carbon potentiometer and label it.
2) State the factors on which the voltage induced in the secondary coil is proportional. Give its equation also.
3) State the precautions while handling an ammeter in a circuit.
4) Draw a diagram of multi range ammeter.
5) Explain the Left hand rule with a neat diagram.
6) Compare electric circuit and magnetic circuit (any 5 points).

Q.4) Answer any five questions. (5 marks each)

1) Draw a diagram of multi range voltmeter.
2) State the precautions while connecting an ohm meter in a circuit.
3) What is voltmeter sensitivity.
4) State the advantages of DMM over analog multi meter.
5) Draw three inductors in series. Write the equation for total inductance in series.
6) State the Faraday's laws.

MCVC - II

FINAL EXAMINATION (M.C.V.C.) FEBUARY 2017
ELECTRONICS TECHNOLOGY PAPER – 2 MAXIMUM MARKS : 80
BASIC ELECTRONICS DURATION : 3 HOURS

Q.1) A) Fill in the blanks from the options given. (5M)

i) Oscillator is a device which converts _____ enegy to _____ energy. (AC / DC)

ii) The overall gain of RC coupled amplifier is _____ (low / high)

iii) In MOSFET drain current is controlled by the _____ at the gate (Electric field/ Electric current).

iv) Transistor is a _____ device (unipolar/ bipolar)

Q.1) B) Match the following. (5M)

A	B
1) Oscillator	a) cheap and light weight.
2) Transformer coupled amplifier	b) buffer amplifier.
3) FET	c) triggering device.
4) UJT	d) generates frequencies.
5) RC coupling	e) Bulky and costly circuit.

Q.1) C) State whether true or false (5M)

1) Oscillator uses negative feedback for its operation.
2) FET is a bipolar device.
3) The wave form obtained in the output of UJT is a function of time.
4) FET is used as RF amplifier because of its low noise level.
5) The DC resistance of a coil is high.

Q.2) Draw the following 5 symbols: (15M)

1) N channel FET.
2) P channel FET.
3) UJT.
4) N type transistor.
5) P type transistor.

Q.3) Answer any five questions. (5 marks each)

1) What are the two types of sinusoidal oscillators. Explain them with diagram.

2) State the classification of oscillators.

3) State advantages and disadvantages of Hartley oscillator.

4) Draw neat diagram of sweep generator give its output wave form also.

5) Draw a neat circuit diagram of RC coupled amplifiers.

6) What are advantages of FET.

Q.4) Answer any five questions. (5 marks each)

1)Give the two classification of amplifiers according to their coupling. Explain each briefly.

2) State advantages and disadvantages of transformer coupled amplifiers.

3) Draw the diagram of differential amplifiers.

4) What are JFET. Name its types.

5) Write a short note on power amplifier.

6) Draw a circuit diagram of Colpits oscillator and give the equation for its output frequency.

MCVC - III

FINAL EXAMINATION (M.C.V.C.) FEBUARY 2017
ELECTRONICS TECHNOLOGY PAPER – 3 MAXIMUM MARKS : 80
DIGITAL ELECTRONICS DURATION : 3 HOURS

Q.1) A) Fill in the blanks from the options given. (5M)

i) _____ is a special kind of register used to count the number of clock pulses. (Counter / Flip flop)

ii) There are _____ types of counters (two / three)

iii) Flip is a _____ multi vibrator (bistable / astable)

iv) There are _____ types of registers (four/ six)

v) _____ counter counts 10 pulses. (Decade/ Binary)

Q.1) B) Match the following. (5M)

A	B
1) Synchronus and Asynchronus	a) Shifts bit to the left
2) Shift left register	b) three filp flops
3) Mode 8 counter	c) Types of counters
4) Most physical data	d) Fast conversion
5) Simultaneous A / D converter	e) Analog form

Q.1) C) State whether true or false (5M)

1) Digital to analog conversion involves translating digital information into equivalent analog information.

2) Construction of simultaneous A to D conversion is simple.

3) T Flip flop is toggle a flip flop whose output switches to opposite state.

4) D flip flop is data latch, also called as delay flip flop.

5) The group of flip flop that stores primary information is called counter.

Q.2) Solve the following (15M)

1) $(187)_{10}$ = ( )$_{16}$

2) $(141)_{16}$ = ( )$_{10}$

3) 1011 + 1101 =

4) 11011 - 1011

5) 11011 + 101101

Q.3) Answer any five questions. (5 marks each)

1) Give applications of counters.

2) Draw a three bit asynchronous counter.

3) Draw a T flip flop. Give its truth table.

4) State the applications of flip flops.

5) State advantages and disadvantages of counter type A/D converter.

6) State the need of D to A converter.

Q.4) Answer any five questions. (5 marks each)

1) Draw a R – 2R ladder D/A converter. Give its output equation also.

2) State advantages and disadvantages of simultaneous A/D converter.

3) What is shift register. Draw a shift left register.

4) State the various applications.

5) What is D flip flop. Draw its logic diagram and give its truth table.

6) What are registers classify them according to data entered.

CHE

F.Y.J.C. SCIENCE - CHEMISTRY PAPER M.MARKS : 70, TIME : 3 hour

SECTION- I

Note : i) Attempt all the questions, all questions are compulsory.
ii) Figure to the right indicate full marks. iii) Use of log table is allowed.
iv) Draw neat and labelled diagram & write balance chemical reactions.

Q:1 Select and write the most appropriate answer from the given Alternatives for each of the following sub-questions. (1 x 7 = 7)

(i) The temperature at absolute zero is _____.
a) 273.15^0C b) 0^0C c) -373.15^0C d) -273.15^0C

(ii) Avogadro's number is the no. of particle present in _____.
a) 1 molecule b) 1 atom c) 1 kg d) 1 mole

(iii) Which of the following can form hydrogen bonding with themselves and water, _____.
a) NH_3 b) C_6H_6 c) Na^+ d) $H_3C-O-CH_3$

(iv) Which of the following is largest in size, _____
a) F b) Mg c) Na^+ d) Na

(v) The sum of oxidation state of all atoms in ClO_4^-, _____'
a) Zero b) – 4 c) – 1 d) + 2

(vi) A substance that gain electron(s) is, _____.
a) An oxidizing agent b) a reducing agent
c) a substance that oxidized itself . d) both 'a' & 'b'.

(vii) Which of the following sets of element belong to the same period ?
a) Li , Na , K b) Na , Mg , Al c) Li , Mg , He d) F , Cl , Br.

Q:II) Attempt Any Six of the following. (6 x 2= 12)

a) Define, i) Empirical formula. ii) Oxidation.
b) Explain Hydrogen bonding in H – F molecule.
c) State Gay – Lussac's law of combining volume.
d) Give the periodic trends in electronegativity of the elements across the periods in the periodic table.
e) Identify oxidants and reductants in the following reactions,
i) $HF_{(aq)} + OH^-_{(aq)} \longrightarrow H_2O_{(l)} + F^-_{(aq)}$
ii) $I_{2\,(aq)} + 2S_2O_3^{-2}{}_{(aq)} \longrightarrow S_4O_6^{2-}{}_{(aq)} + 2I^-_{(aq)}$
f) Define electron gain enthalpy, explain how it changes in Halogens (group-17).
g) Explain dipole – dipole interaction with one suitable example.
h) Describe in brief about the periods in the periodic table.

: III) Attempt any three of the following . (3 x 3 = 9)

i) Define and explain redox reaction with one suitable example.
ii) State and explain Boyle's law .

iii) Show that the volume of one mole of a gas at STP is always constant and is equal to 22.4 dm^3.

iv) Derive the expression showing the relationship between density and pressure.

v) Define ionization enthalpy mentioned any two factors affecting ionization enthalpy. Explain any one factor of it.

Q: IV) [A] Attempt / Solve any three of the following. (3 x 2 = 6)

1) Determine the oxidation number of,

a) 'As' in H_3AsO_3 . b) 'C' in $K_2C_2O_4$.

2) Convert , (i) 30^0C into Fahrenheit temperature. (ii) 96^0F into degree celcius.

3) At 300K a certain mass of a gas occupies 1×10^{-4} dm^3 volume. Calculate its volume at 450K at the same constant pressure.

4) Calculate the no. of moles present in 1.1×10^{-4} kg of CO_2 . (given atomic mass, C = 12 , O = 16 , H = 1).

[B] Calculate the number of molecules present in 0.1 moles of Helium gas. (1)

SECTION - II

Q:5) Select and write the most appropriate answer from the given Alternatives for each of the following Sub – questions. (7)

(i) Carbon in atom in acetylene molecule is _____ hybridized.
a) sp^2 b) sp^3 c) sp d) spd.

(ii) Geometry (structure) of Ethyne molecule is _____.
a)trigonal b) linear c) Tetrahedral d) pyramidal.

(iii) The number of pi(π) bond electrons in benzene molecule is /are _____.
a) 10 b) 12 c) 4 d) 6

(iv) In Ozonolysis of benzene, the no.of ozone molecules consumed by benzene is / are, _____. a) 1 b) 2 c) 3 d) 4

(v) The orange pink colour of carrot is due to the presence of , _____
a) β – carotene b) zingiberene c) α – farnesene d) Limonene.

(vi) How many structural isomers can be represented by alkene having molecular formula C_4H_8. _____ a) 3 b) 2 c) 4 d) non of these.

(vii) The IUPAC name of the compound , $CH_3 - CH = C - CH - CH_3$ (with CH_3 and C_2H_5 branches)
a) 2 – Ethyl 3 – Methyl pent – 3 – en.
b) 4 – Ethyl 3 – Methylpent – 2 ene .
c) 3,4 – Dimethylhex – 2 – ene. d) 2 – Ethyl 3 – Methylpent – 3 – ene.

Q:6) Attempt Any Six of the following. (6 x2 = 12)

a) What are alkynes ? Give general formula of alkynes.
b) Write electronic structure of , (i) Ethyne & (ii) Benzene.
c) Write important uses of Ethylene.
d) How is ethylene prepared from the following (give only reactions.)
(i) Ethyl alcohol & (ii) Ethyl bromide.?

e) What
(i)
f) Explai
(i)
g) Give th
(i)
h) What is

Q: 7) Attempt A
(i) State
(ii) Expla
(iii) Write
(iv) Write

Q:8) Attempt the
(i) Define
nitratio
(ii) Write b
a) Whe
b) What
c) When
d) Acetyl
(iii) Write stru

==========xzxxx

e) What happens when, benzene is reacted with

(i) H_2 in presence of 'Ni' catalyst. & (ii) Br_2 in presence of $FeBr_3$.

f) Explain the following characteristics of Aromatic compounds,

(i) Percentage of Carbon (ii) Chemical behavior.

g) Give the structure of the following compounds,

(i) 3 – methylbut – 1-yne. (ii) 2,4 – dimethylpent -2- ene.

h) What is the action of liquid bromine (Br_2) on acetylene ?

Q: 7) Attempt Any Three of the following. (3 x 3= 9)

(i) State and explain Markownikoff's Rule with one suitable example.

(ii) Explain structure of Ethylene molecule.

(iii) Write a note on Friedel – Craft Reaction of benzene.

(iv) Write a note on Ozonolysis of Any one (a) Ethyne (b) Ethene.

Q:8) Attempt the following.

(i) Define Nitration. Which reagent is used for nitration ? Give one example of nitration reaction. (3M)

(ii) Write balanced chemical reaction for the following , (Any Three) (3M)

a) When benzene is reacted with Cl_2 in presence of anhydrous $AlCl_3$.

b) What happens when Calcium carbide is treated with water ?

c) When vapours of Phenol passedover heated Zn – dust ?

d) Acetylene is reacted with dilute Br_2 water.

(iii) Write structure of Methylacetylene. (1M)

==========xzxxxxxx====vvvvbbbn========xxxacccc=======cavvcbvn==========

-3

4. What is assimilation?

ANNUAL EXAMINATION -2017

(1) Biology.

Biology

Time : 3 hrs **Max. Marks : 70**

Note:

1. All questions are compulsory.
2. Answers to the questions in section-I and section-II should be written in TWO separate answer books.
3. Questions from section I attempted in the answer book of section II and vice-versa will not be assessed.
4. Draw neat and labeled diagrams wherever necessary.
5. Figures to right indicate full marks.

SECTION-I

Q1. Select and write the most appropriate answer from the given alternatives for each sub-question. **(7)**

1. The first vascular plants are _____.
   a. Pteridophyta
   b. Algae
   c. Sequoia
   d. Wolfia
2. Replication of DNA takes place during _____ .
   a. G_1 Phase
   b. S Phase
   c. G_2 Phase
   d. M Phase
3. The fungal component of lichen is called_____.
   a. Phycobiont
   b. Photobiont
   c. Mycobiont
   d. Symbiont
4. Most appropriate temperature for vernalization ranges between _____.
   a. 10°C to -4°C
   b. -5°C to -7°C
   c. 5°C to 10°C
   d. 0°C to 5°C
5. The commonly called stress hormone of plants is _____.
   a. Auxin
   b. Gibberellin
   c. Cytokinin
   d. Absisic acid
6. The term classification was coined by _____.
   a. Theophrastus
   b. A. P. de Candolle
   c. Aristotle
   d. Linnaeus

4. What is assimilation?

7. Solution outside cell has higher concentration than cell sap. The solution is ___
   a. Isotonic
   b. Hypertonic
   c. Hypotonic
   d. Acidic
8. Critical elements are _____.
   a. N, P, K
   b. Na, P, Ca
   c. N, P, Mg
   d. Mn, Fe, Cu

Q2. (A) Answer each question in one sentence only. **(6)**

i. Define Cell division.
ii. Give two examples of Angiospermae.
iii. Name the smallest Gymnosperm.
iv. What is osmosis?
v. Name the essential elements.
vi. State the components of lichen.
vii. Define diffusion.
viii. Which virus causes AIDS?

(B) Sketch and label structure of Root hair. **(2)**

(C) Attempt any TWO of the following. **(4)**

i. Differentiate between monocotyledonous and dicotyledonous plant.
ii. Name all plant growth hormones.
iii. Define cell division and cell cycle.
iv. What is transpiration? State its types.

Q3. (A) Attempt any TWO of the following. **(6)**

i. Write note on Viruses.
ii. Explain the path of water in root tissue during absorption.
iii. What are the types of water and which one is available to plants? Give any two role of water in plants.
iv. Write a note on Gymnosperm.

(B) Sketch and label Epigeal germination of seed. **(3)**

Q4. Define Binomial nomenclature. Give the rules to write Binomial nomenclature with the help of examples. **(7)**

OR

Explain Prophase – I and state the significance of Meiosis. **(7)**

SECTION II

Q.5. Select and write the most appropriate answer from the given alternatives for each sub question. (any 7) **(07)**

i) A dual organ is
a) Trachea b) Bronchus c) Pharynx d) Larynx.

ii) Salivary amylase brings about digestion of.
a) Proteins b) fats c) Carbohydrates d) Vitamins.

iii) Hormone is secreted by Islets of Langerhans is
a) Secretin b) Insulin c) gastrin d) cholecystokinin

iv)The ventral nerve chord of cockroach is
a) solid b) double ganglionated c) ventral d) all of them.

v) Cell theory was put forward by:.....
(a) Schleiden and Schwann (b) Robert Hook
(c) Watson and Crick (d) Darwin

vi) Which of the following membrane is found in prokaryotic cell envelope .....
(a) Glycocalyx (b) Cell wall
(c) cell membrane (d) all the above

vii) Blood filled cavity in cockroach is called _____
(a) haemocoel (b) paracoel (c) spongocoel (d) metacoel

viii) 6^{th} abdominal ganglion is largest and present in _____ segment
(a) 6^{th} (b) 7^{th} (c) 5^{th} (d) 8^{th}

Q.6.(A). Answer the following questions in one or two sentence each. (any6) **(06)**

1) Name the different types of salivary glands present in human ?
2) Describe the structure of alveoli?
3) What is COPD?
4) Name the male reproductive organ of the cockroach?
5) What is syncytial cell
6) Name different mouth parts of cockroach.
7) What is ommatidia?
8) What is totipotency?

(B) Sketch and label plant cell **(02)**

(C) Attempt any two of the following **(04)**

1) Define occupational lung disease? Name any two occupational lung diseases ?
2) Mentions any four functions of liver?
3) Describe the structure and functions of golgi complex
4) Describe cell theory

Q.7. (A) Attempt any two of the following **(06)**

1. Write a short note on asthama ?
2. Describe the structure of mitochondria.
3. Describe fluid mosaic model of plasma membrane
4. Describe female reproductive system of cockroach

(B). Sketch and label respiratory system of cockroach **(03)**

Q.8. With the help of well labelled diagram describe digestive system of cockroach (07)

OR

Differentiate between inspiration and expiration process of breathing? Add a note on release of CO_2

4. What is assimilation?

Sci- MATHS

FYJC(SC)Maths
(Annual Examination)
Secton-1

MM=80
TIME=3 hours

2(I)(A). Select and write the correct answer from the given alternatives in each of the following. 06

1. If $\begin{vmatrix} x & -3 \\ -1 & x+2 \end{vmatrix}=0$ the value of x is (a) x= -1 , x= 3 (b) x=1 , x= -3 (c) x= -1 , x= -3 (d) x= 1 , x= 3.

2. The equation of circle with center at the origin and radius 4 is (a) $x^2 + y^2= 4$ (b) $x^2 + y^2= -16$ (c) $x^2 + y^2= 16$ (d) $x^2 + y^2= 0$.

3. If $\bar{a} = 2\bar{\imath} - 3\bar{\jmath} + \bar{k}, \bar{b} = \bar{\imath} + 2\bar{\jmath} - 3\bar{k}$ then $\bar{a}.\bar{b}$ is (a) 7 (b) 8 (c) -7 (d) 6.

(B). Attempt Any three of the following 06

1. Find the length of perpendicular from the origin to the line 4x+3y-2= 0.

2. Find k, if the given equations are consistent 7x-ky= 4 , 2x+5y= 9 , 3x+y= 8.

3. Find k, if the matrix $\begin{bmatrix} 7 & 3 \\ -2 & k \end{bmatrix}$ is singular.

4. Find $\bar{a} \times \bar{b}$ where $\bar{a} = 3\bar{\imath} - \bar{\jmath} + 2\bar{k}, \bar{b} = \bar{\imath} + 5\bar{\jmath} - 2\bar{k}$.

3(A). Attempt any two of following 06

1. Find the acute angle between the lines $x - \sqrt{3}y + 4 = 0$ and $x + \sqrt{3}y - 3 = 0$.

2. In a quadrilateral ABCD prove that $\overline{AD} + \overline{BC} = 2\overline{MN}$ where M and N are the mid point of AB and CD.

3. Find the feasible solution of $3x + 2y \leq 18, 2x + y \leq 10, x \geq 0, y \geq 0$.

(B). Attempt any two of the following. 08

1. Without expanding prove that $\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix} = 2(a+b+c)^3$.

2. If $A = \begin{bmatrix} 4 & -6 & 3 \\ 2 & 1 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 3 \\ 1 & 4 \\ 0 & 2 \end{bmatrix}$ show that AB is nonsingular but BA is singular.

4. What is assimilation?

3. If $\bar{a}+\bar{b}+\bar{c}=0$, $|\bar{a}|=3$, $|\bar{b}|=4$, $|\bar{c}|=5$ show that $\bar{a}.\bar{b}+\bar{b}.\bar{c}+\bar{c}.\bar{a}=-25$.

Q(III)(A). Attempt any two of the following. 06

1. Find the equation of line whose x-intercept is -3 and perpendicular to the line 3x+5y-8=0.
2. Find the equation of circle with radius 5 concentric with the circle $x^2+y^2-6x+4y+12=0$.
3. If $A=\begin{bmatrix}1 & 2 & 2\\ 2 & 1 & 2\\ 2 & 2 & 1\end{bmatrix}$ show that A^2-4A is a scalar matrix.

(B). Attempt any two of the following 08

1. Find the equation of lines through (3,2) which make an angel of 45° with $x-2y-3=0$.
2. If θ is angel between unit vectors $\overline{e1}$ and $\overline{e2}$ then prove that $\sin\frac{\theta}{2}=\frac{1}{2}|\overline{e1}-\overline{e2}|$.
3. Solve the equation by cramer's rule $2x-y+3z=4, x+y+z=2, 3x+y-z=2$.

Section-2

Q(I)(A). Select and write the correct answer from the given alternatives in each of the following. 06

1. Value of $\lim_{x\to 4}\frac{x^3-64}{x^2-16}$ is (a) 6 (b) 8 (c) -6 (d) -8.
2. Derivative of $\sec x+\tan x$ is (a) $\sec x(\tan x+\sec x)$ (b) $\tan x(\sec x+\tan x)$ (c) $-\sec x(\tan x+\sec x)$ (d) $-\tan x(\sec x+\tan x)$.
3. value of $\int\frac{x^2+1}{x}\,dx$ is (a) $x^2+logx+c$ (b) $\frac{x^2}{2}+logx+c$ (c) $\frac{logx}{2}+x^2+c$ (d) $\frac{x^2}{2}-logx+c$.

(B). Attempt any three of the following 06

1. Find the middle term in the expansion of $(x+\frac{2}{x^2})^8$.
2. Find $\frac{dy}{dx}$, $y=x^3-\frac{1}{x}+10^x+7$.
3. Evaluate $\int(tan^2x)\,dx$.
4. Expand $(2x^2+3)^5$.

Q(II)(A). Attempt any t

1. Evaluate $\lim_{x\to 0}\frac{2si}{}$
2. Find the coeffici
3. Evaluate $\int sin4x$

(B). Attempt any tw

1. Prove by metho
2. If $P(A)=\frac{2}{3}$, $P(\bar{B}$
3. Evaluate $\lim_{x\to\frac{\pi}{3}}\frac{\sqrt{3}-t}{\pi-}$

III)(A). Attempt any two

1. Find $\frac{dy}{dx}$ if $y=\frac{}{1}$
2. Evaluate $\int sin^2x\,d$
3. The probability of is hit by (i) At leas

(B). Attempt any two

1. ~~Evaluate~~ if $f'(x)=$
2. Evaluate $\lim_{x\to 3}\frac{logx-l}{x-3}$
3. Prove by method

FYJ

DAY & DATE	
MONDAY 27/02/2017	
MONDAY 27/02/2017	
MONDAY 27/02/2017	

Students should report 2

Q(II)(A). Attempt any two of the following 06

1. Evaluate $\lim_{x\to 0} \frac{2sinx-sin2x}{x^3}$.
2. Find the coefficient of x^8 in the expansion of $(x^5 - \frac{1}{x^3})^8$.
3. Evaluate $\int sin4x\, cos3x\, dx$.

(B). Attempt any two of the following 08

1. Prove by method of induction that $(2^{3n} - 1)$ is divisible by 7 for all n∈N.
2. If $P(A) = \frac{2}{3}, P(\bar{B}) = \frac{3}{4}, P(A/B) = \frac{4}{5}$ find (i) $P(A \cap B)$ (ii) $P(\bar{A} \cup \bar{B})$ (iii) $P(\bar{A} \cap \bar{B})$.
3. Evaluate $\lim_{x\to \frac{\pi}{3}} \frac{\sqrt{3}-tanx}{\pi-3x}$.

III)(A). Attempt any two of the following 06

1. Find $\frac{dy}{dx}$ if $y = \frac{sinx}{1+sinx}$.
2. Evaluate $\int sin^2x\, dx$.
3. The probability of A and B hits the target is $\frac{1}{5}$ and $\frac{1}{6}$. Find the probability that target is hit by (i) At least one of them (ii) None of them.

(B). Attempt any two of the following 08

1. ~~Evaluate~~ if $f'(x) = 3x^2 + 2x - 7$, Find $f(x)$ if $f(1) = 15$.
2. Evaluate $\lim_{x\to 3} \frac{logx-log3}{x-3}$.
3. Prove by method of induction $1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}$ for all n∈N.

RIZVI COLLEGE OF ARTS, SCIENCE & COMMERCE
FYJC (SCIENCE) PRACTICAL EXAMINATION - MATHS - 2017

DAY & DATE	TIMINGS	DIVISON	BATCHES	ROOM NO
MONDAY 27/02/2017	12noon to 1.00pm	A	A1	108
			A2	109
			A3	110
MONDAY 27/02/2017	2PM TO 3PM	B	B1	108
			B2	109
MONDAY 27/02/2017	2PM TO 3PM	C	C1	110
			C2	204

Students should report 20minutes before the practical examination with their complete journals

4. What is assimilation?