



**Model Paper “Pre-Engineering, ICS, Commerc Group”  
For Balochistan Residential College Loralai  
Self-Finance 1<sup>st</sup> Year Entry Test 2020**



**MATHEMATIC PORTION**

**TIME ALLOWED: 45 MINUTES**

**MARKS: 25**

**Note:** Attempt all questions.

**Q.1** Solve the following short questions.

**(1x9=09)**

- i. Solve by factorization:  $7x^2+4x-3=0$
- ii. Discuss the nature of roots of  $5x^2-3x+2=0$
- iii. Solve  $(1-2\omega+\omega^2)$
- iv. Form quadratic equation with roots  $\pm 7i$
- v. Find 3<sup>rd</sup> proportional of  $x^2-y^2, x+y$
- vi.  $A = (2,3,4)$ ,  $B = \{1,2,3\}$  then write binary relation  $R = \{(x,y)/x+y=5, x \in A, y \in B\}$
- vii. Find median of data 45, 58, 61, 35, 29, 37, 58, 55, 48, 42
- viii. Convert  $12.268^\circ$  to D°M'S" Form.
- ix. Find r when  $l = 56cm$ ,  $\theta = 45^\circ$

**Q.2** Solve the following:

**(2x3=06)**

- i. If  $\alpha, \beta$  are the roots of  $4x^2-12x-7=0$ , find equation whose roots are  $\alpha^2, \beta^2$ .
- ii. Solve the equation  $\sqrt{x+3}=4x+7$
- iii. If  $\Sigma f = 150, \Sigma fx = 3450, \Sigma fx^2 = 95650$  then find variance.

**Q.3** Resolv  $\frac{x^2+2}{(x-2)(x-3)}$  by partial fraction.

**(05)**

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**Q.4** Verify the identity  $\frac{1+\cos\theta}{1-\cos\theta} = (\operatorname{Cosec}\theta + \cot\theta)$

**(05)**

## ENGLISH PORTION

TIME ALLOWED: 45 MINUTES

MARKS: 25

**Note:** Attempt all questions.

Q.1 Translate the following into Urdu. (03)

- i. Ignorance ruled everywhere and in every sphere of life.
- ii. Travelling has become very fast and comfortable.
- iii. This tradition began centuries ago and it is still progressing day by day.

Q.2 Define the following terms with examples. (03)

- i. Pronoun
- ii. Adjective
- iii. Verbosity

Q.3 Use the following in your sentences. (03)

- i. Glory
- ii. Efficiency
- iii. Defect.

Q.4 Change the following active sentences into passive sentences. (03)

- i. The peon rings the bell.
- ii. She has finished her work.
- iii. They invited me to a party.

Q.5 Change the narrations. (03)

- i. He says to me, "I am working hard these days".
- ii. Mother said to her son, "May you live long".
- iii. I said to Anwer, "Where do you live in Karachi".

Q.6 Translate into English. (05)

- i. اگر محنت کرو گے تو کامیاب ہو جاؤ گے۔
- ii. تالی ایک ہاتھ سے نہیں بچتی۔
- iii. صبح سے زوردار بارش ہو رہی ہے۔
- iv. ڈاکٹر کے آنے سے پہلے مریض صحت یاب ہو چکا ہے۔
- v. علم حاصل کرو خواہ تمہیں اس کیلئے چین ہی جانا پڑے۔

Q.7 Write an essay of not less than 15 lines on any one of the following. (05)

- i. Money is Every Thing
- ii. My Hobby

## CHEMISTRY PORTION

TIME ALLOWED: 45 MINUTES

MARKS: 25

**Note:** Attempt all questions.

**Q.1** Give the short answers of the following.

(1x15=15)

- i. Define equilibrium. Also give its types with example.
- ii. Write the balanced chemical equation and equilibrium constant expression of the following reactants.
  - a) NaCl and AgNO<sub>3</sub>
  - b) NaOH and H<sub>2</sub>SO<sub>4</sub>
- iii. Write any two characteristics of bases.
- iv. Define Lewis concept of acid and base.
- v. Define the following terms with examples.
  - a) Catenation
  - b) Homologous series
- vi. How natural gas form? Also give its composition.
- vii. Define functional group. Give the formula and example of functional group carboxylic acid.
- viii. What are the unsaturated hydrocarbons? Give example.
- ix. Give the reaction of reduction alkyl halide.
- x. What is formed by the dehalogenation of tetra halides? Give reaction also.
- xi. Give the source of the organic compounds:
  - a) Glucos
  - b) Fructose
- xii. Write a short note on Mesosphere.
- xiii. How can you remove the permanent hardness of water?
- xiv. What is the origin of the petroleum?
- xv. What is fractional distillation?

**Q.2** Define and explain the “law of Mass action”

(05)

**Q.3** What are the fatty acids? Also explain the source and uses of lipids.

(05)

## PHYSICS PORTION

TIME ALLOWED: 45 MINUTES

MARKS: 25

**Note:** Attempt all questions.

- Q.1 Write short answers of the following. (15)**
- i. What is shunt resistance? What is its purpose?
  - ii. How can the cost of electricity consumed in a house be calculated?
  - iii. On what factors the magnitude of induced e.m.f depends upon.
  - iv. What is a transformer and its principle?
  - v. What is the function of carbon brushes in d.c motor?
  - vi. State the rule by which the direction of force on a current carrying conductor can be determined?
  - vii. What are the functions of split rings in d.c motors?
  - viii. Nucleus of an atom is positive, then how a negative charge in the form of a  $\beta$  particle comes out of the nucleus?
  - ix. Give two uses of radio isotopes?
  - x. Which type of radiations are emitted in the process of radio activity?
  - xi. How a diode is forward biased? What is its resistance in this state?
  - xii. Write down the output equation and truth table of NAND gate?
  - xiii. What is protocol?
  - xiv. What are point charges?
  - xv. What is meant by data managing? How it is important for us.
- Q.2 What is an A.C generator? Explain its construction and working. (05)**
- Q.3 Describe the properties of  $\alpha$ ,  $\beta$  and  $\gamma$  radiations? (05)**