



The Islamia University of Bahawalpur

BS (Morning)

Department of URDU

Semester –2nd (Session 2019-2023 Fall)

Paper: Mathematics-I

Term: Final Exam Marks: 20

Dated: 09.02.2020 (Sunday)

Time: 10.00 am

Name: _____

Roll No: _____

Part – I (25 minutes)

NOTE: Attempt all parts. Each part carries one mark.

Q.1: 1) ' θ ' is measured in _____.

- a) Sexagesimal system b) DMS system c) Circular system d) none of these

2) If $|A| = 0$ then A is called a

- a) Singular Matrix b) Non singular matrix c) Identity matrix d) none of these

3) Notation of radius of the circum circle is a) r b) R c) Δ d) r_1

4) Notation of radius of in circle is a) r b) R c) Δ d) r_1

5) Product of a complex no and its conjugate is

- a) Natural number b) Complex number c) Rational number d) none of these

5) If one acute angle of the triangle is 35 then other acute angle is

- a) 145 b) 65 c) 45 d) 55

6) $rr_1r_2r_3 =$ a) $s - a$ b) s c) Δ d) Δ^2

7) The equation $ax^2 + bx + c = 0$ becomes pure quadratic if a) $a=0$ b) $b=0$ c) $c=0$ d) All of these

Marks the true and False statement.

8) If one acute angle of the triangle is 35 then other is 45 T/F

9) $rr_1r_2r_3 = s$. T/F

10) Notation of radius of in –circle is R T/F

11) $\sec^2 \theta - \tan^2 \theta = 1$ T/F

12) The 60th part of one degree is called one second T/F

13) $\frac{5\pi}{4}$ radian is equal to 225 T/F

PTO

Fill in the blanks

14) Circle passing through the vertices of triangle is called

15) The value of 1 radian is equal to

16) If $\tan \theta < 0$ and $\sin \theta > 0$ then θ lies in the quadrant

17) A matrix whose all the diagonal entries are same is called

18) In a matrix $(AB)^{-1} =$

19) $\sin^2(2\theta) + \cos^2(2\theta) =$

20) Area of triangle in terms of its side is



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Part-II (60 minutes)

NOTE: Attempt all parts.

Q.2:

- a) If $\sin \theta = -\frac{1}{\sqrt{2}}$ and terminal arm of the angle is not in III quad find the remaining functions:
- b) Verify $\sin^2 \frac{\pi}{6} : \sin^2 \frac{\pi}{4} : \sin^2 \frac{\pi}{3} : \sin^2 \frac{\pi}{2} = 1 : 2 : 3 : 4$.
- c) Find x , if $\tan^2 45^\circ - \cos^2 60^\circ = x \sin 45^\circ \cos 45^\circ \tan 60^\circ$.
- d) Prove that $r_1 r_2 + r_2 r_3 + r_3 r_1 = s^2$
- e) prove that $\cot \alpha - \tan \alpha = 2 \cot 2\alpha$
- f) Express the following products as sum or difference $\sin(x + 45^\circ) \sin(x - 45^\circ)$
- g) show that $r = 4R \sin \frac{\alpha}{2} \sin \frac{\beta}{2} \sin \frac{\gamma}{2}$

Q.3:

- a) Prove that the following $\sin^6(\theta) + \cos^6(\theta) = 1 - 3\sin^2 \theta \cos^2 \theta$ (04)
- b) Prove that $\cos 20^\circ + \cos 100^\circ + \cos 140^\circ = 0$ (04)
- c) Prove that in an equilateral triangle $r : R : r_1 = 1 : 2 : 3$ (04)