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B.Sc. Agriculture (2014 to 2018) (Sem.–1)

B.Sc. Hons. (Agriculture)

MATHEMATICS – I

Subject Code : BSAG-106a

M.Code : 72213

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) Find the centre and radius of :

$x^2 + (y+2)^2 = 9$

b) Find equation of circle whose radius is 5 and centre lies on x-axis and passes through point (2,3).

c) Determine x such that $m = 2$ and line passes (2,5) and (x,3)

d) How many number of two digits are divisible by 7?

e) The sum of four numbers in G.P. is 85 and product is 4096, find them.

f) Find the positive value of m for which coefficient of x^2 in the expansion of $(1+x)^m$ is 6.

g) Write the number of ways 7 men and 7 women can sit on a round table such that no two women sit together.

h) If there are 12 persons in a party, and if each two of them shake hands with each other, how many handshakes happen in the party?

i) How many number of two digits are divisible by 3?

j) Define Arithmetic Progression.

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SECTION-B

2. a) Find the area of a right angled triangle whose base is 12cm and hypotenuse is 13cm.

   b) The altitude drawn to the base of an isosceles triangle is 8cm and the perimeter is 32cm. Find the area of the triangle.

3. a) If each side of a square is increased by 25%, find the percentage change in its area.

   b) Two concentric circles form a ring. The inner and outer circumferences of the ring are $50\frac{2}{7}$m and $75\frac{3}{7}$m respectively. Find the width of the ring.

4. a) A cube of edge 15cm is immersed completely in a rectangular vessel containing water. If the dimensions of the base of vessel are 20cm×15cm, find the rise in water level.

   b) A rectangular water tank is 80m × 40m. Water flows into it through a pipe 40 sq. cm at the opening at the speed of 10km/hr. By how much height, the water level will rise in the tank in half an hour?

5. a) Solve the following quadratic equation by factorisation method

$$9x^2 - 12x + 20 = 0$$

   b) Solve the quadratic equation $25x^2 - 30x + 11 = 0$ by using the general expressions for the roots of a quadratic equation.

6. a) How many words can be framed from the letters of word 'EXTRA' so that the vowels are always together?

   b) In how many ways can a cricket eleven be chosen out of a batch of 15 players?

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SECTION-C

7. a) Expand $(x^2 + 2a)^5$ by binomial theorem.

   b) Find the sum of following series :

   5 + 55 + 555 +……to n terms.

8. a) Find the equation of a line that has y intercept 4 and is perpendicular to the line joining (2, –3) and (4,2).

   b) Find the equation of the line which makes an angle of 15° with the positive direction of x-axis and which cuts an intercept of length 4 on the negative direction of y-axis.

9. a) Find the equation of circle which passes through 2 points on the - axis which are at distances 4 from the origin and whose radius is 5.

   b) Find equation of the circle which passes through the origin and cuts off intercepts 3 and 4 from the positive parts of the axes respectively.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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