E 2355 (Pages : 2) Reg. No.....

Name.....

UNDER GRADUATE (C.B.C.S.S.) EXAMINATION, OCTOBER 2011

Fifth Semester

Open Course—APPLICABLE MATHEMATICS

(Offered by the BOS in Mathematics)

Time : Three Hours Maximum Weight : 25

Part A

Answer **all** *questions.*
Each bunch of four questions carries weight of 1.

I. 1 Solve the equation $x+1=\frac{6}{x}$.

2 What is the x-co-ordinate of a point lying on the y-axis.

3 Find the value of sin 30° cos 60° + cos 30° sin 60°.

4 In how many ways three books can be arranged in a shelf.

II. 5 Find the derivative of $x \cdot \sin x$.

6 Four coins are tossed simultaneously. What is the probabilty of getting two heads ?

7 If the product of two numbers is 20736 and their H.C.F. is 24, find the L.C.M.

8 Evalauate 0.4×0.5 of $2.4 \div 0.02$.

III. 9 Find the cube root of 343.

10 80 is 32 % of a number. Find the number.

11 A man sold his bicycle for ₹ 810, loosing one-ninth of its selling price. Find the cost price of the bicycle.

12 An aeroplane flies 450 km. in 20 minutes. Find its speed in km/hr.

IV. 13 Find the interest on ₹ 750 in 3 years and 4 months at 10 % per annum.

14 Perimeter of a square is 28 cm. Find its area.

15 Reduce to the lowest terms $\frac{x^2-1}{x^2-x}$.

16 Factorise $x^2 + 6x + 8$.

$(4 \times 1 = 4)$

Turn over

Part B

Answer any **five** *questions.*
Each question carries weight 1.

17 Evaluate $4^{\frac{3}{2}} \times 125^{-\frac{2}{3}}$.

18 Draw the graph of the equation $3x + 2y = 0$.

19 Differentiate log sec x with respect to x.

20 Evaluate $\int_0^{\pi/2} \cos x \, dx$.

21 Find the least number which when divided by 36, 48 and 112 leaves no remainder.

22 A field is 60 m. long and 40 m. wide. Find the ratio between its length and perimeter.

23 A man spends 65 % of his salary and saves ₹ 525 per month. Find his monthly salary.

24 If 15 men can complete a work in 30 days, in how many days will 18 men complete it.

$(5 \times 1 = 5)$

Part C

Answer any **four** *questions.*
Each question carries weight 2.

25 There are 6 seats available in a car. In how many ways can 6 persons be seated for a journey if only 3 of them can drive.

26 Find the derivative of $\tan^{-1}(\sin 2x)$.

27 Integrate $\sin^4 x . \cos x$.

28 Show that 5309 and 3072 are prime to each other.

29 A fort had provisions for 300 men for 90 days. After 20 days 50 men left the fort. How long would the food last at the same rate.

30 A man covers a distance of 60 km. at a speed of 40 km/hr. and a distance of 50 km. of a speed of 30 km./hr. Calculate his average speed for the whole journey.

$(4 \times 2 = 8)$

Part D

Answer any **two** *questions.*
Each question carries weight 4.

31 6 men or 8 women earn ₹ 960 in one day. Find one day earning of 4 men and 5 women.

32 What is the probability of throwing either 7 or 11 with two dice.

33 (a) Find the derivative of log $(\sec x + \tan x)$.

(b) Find $\int \sin^8 x \, dx$.

$(2 \times 4 = 8)$