Time : 1½ Hours

FIRST-TERM MATHEMATICS LEVEL 1 (E)

Subject Code

S	2	0	2	1

Total No. of Questions : 40 (Printed Pages : 16) Maximum Marks : 40

INSTRUCTIONS : (*i*) The question paper consists of 40 questions. *All* questions are compulsory.

(*ii*) Every question has four choices for its answers (A), (B), (C) and (D) and only one of them is the correct answer.

(*iii*) On the OMR sheet, for each question number, darken with a ball point pen ONLY ONE bubble corresponding to what you consider to be the most appropriate answer, from among the four choices.

(*iv*) **Please note that it is not possible to change the answer once you have filled up the bubble with a ball point pen. Hence sufficient care must be taken while darkening the bubbles.**

(*v*) For each question, you will be awarded ONE mark if you have darkened only the bubble corresponding to the correct answer. In all other cases, you will get zero mark. **There is no negative mark.**

(*vi*) Only one OMR sheet will be provided.

(*vii*) Use only Black *or* Blue ball point pen.

1. The probability of an event is a value which is always :

(A) from 0 to 1

(B) more than 1

(C) less than 0

(D) between 0 and 1

2. Which of the values given below could be the probability of an event ?

(A) $\sqrt{0.6}$

(B) $\sqrt{9}$

(C) 1.7

(D) $\sqrt{0.36}$

3. Two dice are thrown simultaneously. Therefore the probability that the same number appears on the top faces is :

(A) 1

(B) $\frac{5}{6}$

(C) $\frac{1}{6}$

(D) $\frac{1}{36}$

4. A box contains cards numbered from 17 to 94. If a card is drawn at random from the box, then the probability that the number on the card is divisible by 16 is :

(A) $\frac{5}{78}$

(B) $\frac{2}{38}$

(C) $\frac{4}{77}$

(D) $\frac{2}{39}$

5. A bag contains 8 white marbles and 3 black marbles. If one marble is taken out of the bag at random, then the probability that it is black is :

(A) $\frac{8}{11}$

(B) $\frac{3}{8}$

(C) $\frac{3}{11}$

(D) $\frac{1}{8}$

6. The degree of the polynomial $(2x^2 - x + 1)(x^2 + 1) - 2x^4$ is :

(A) 2

(B) 3

(C) 4

(D) 5

7. The zeros of the polynomial $3x^2 - x - 4$ are :

(A) -4 and 3

(B) $\frac{-2}{3}$ and $\frac{1}{3}$

(C) $\frac{4}{3}$ and -1

(D) 1 and $\frac{3}{4}$

8. If one zero of the quadratic polynomial $6x^2 - bx + 8$ is $\frac{1}{3}$, then the other zero is :

(A) $\frac{1}{4}$

(B) $\frac{4}{3}$

(C) 4

(D) 26

9. When $(x^3 - 3x^2 - x - 4)$ is divided by $(x^2 - x - 3)$, the quotient is $(x - 2)$. What is the remainder ?

(A) -2

(B) -10

(C) $6x - 10$

(D) $x - 10$

10. If $\propto$ and ω are the zeros of the quadratic polynomial $(10x^2 - 2x - 5)$, then $\propto^2 + \omega^2$ is :

(A) $\frac{29}{100}$

(B) $\frac{9}{20}$

(C) $\frac{1}{2}$

(D) $\frac{26}{25}$

11. For equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ if $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$,

then the pair of equations will have :

(A) a unique solution

(B) two solutions

(C) no solution

(D) infinitely many solutions

12. The lines represented by the equations $2x + 3y = 5$ and $8x + 12y = 15$ are :

(A) Coincident

(B) Intersecting

(C) Parallel

(D) Skew

13. If $25x + 11y = 47$ and $11x + 25y = 5$, then the value of $x - y$ is :

(A) 0

(B) 1

(C) 2

(D) 3

14. The solution of the pair of linear equations $5x - y = 3$ and $4x + 3y = 10$ is :

(A) $x = 2, y = 7$

(B) $x = 4, y = -2$

(C) $x = 1, y = 2$

(D) $x = -1, y = -8$

15. If $x = 3, y = -3$ is the solution of the pair of linear equations $ax - by = -12$ and $2ax + y = 3$, then the value of $a + b$ is :

(A) -4

(B) -2

(C) 4

(D) 5

16. The Linear equation which is inconsistent with the equation $3x - 5y = 8$ is :

(A) $3x + 5y = 8$

(B) $3x - 5y = 8$

(C) $6x - 15y = 16$

(D) $6x - 10y = 8$

17. If $8x + 14y - 5 = 0$, then x = ...

(A) $14y + 5$

(B) $\frac{5 + 14y}{8}$

(C) $\frac{14y - 5}{8}$

(D) $\frac{5 - 14y}{8}$

18. The value of K for which the pair of equations $3x - Ky = 4$ and $Kx - 3y = K + 1$ will have infinitely many solutions is :

(A) -3

(B) -1

(C) 1

(D) 3

19. The line passing through points (5, 6) and (4, 7) will intersect line represented by the equation $3x - y = 1$ at the point :

(A) (1, –1)

(B) (2, 5)

(C) (–2, –7)

(D) (3, 8)

20. Substituting 'm' and 'n' for $1/x$ and $1/y$ respectively in the equation $\frac{4}{x} + \frac{2}{y} = 5$ the equation will be written as :

(A) $4m + 2n = 7mn$

(B) $mx + ny = 5$

(C) $\frac{4}{m} + \frac{2}{n} = 5$

(D) $4m + 2n = 5$

21. If ΔABC is right angled at B, then $\frac{AB}{AC}$ is equal to :

(A) sin A

(B) cos A

(C) sec A

(D) cosec A

22. If $\cos 7x = \sin 3x$, then the value of x is :

(A) 9°

(B) 10°

(C) 18°

(D) 36°

23. The simplified form of $\sqrt{\frac{1}{\sin^2\theta}+\frac{1}{\cos^2\theta}}$ is :

(A) 1

(B) $\sin\theta \cdot \cos\theta$

(C) $\sec\theta \cdot \operatorname{cosec}\theta$

(D) $\tan\theta$

24. The value of $\sec^2 45^\circ$ is :

(A) $\frac{1}{2}$

(B) $\frac{3}{4}$

(C) 1

(D) 2

25. The simplified form of $(\operatorname{cosec}\theta - \cot\theta)^2$ is :

(A) $\frac{1-\sin\theta}{1+\sin\theta}$

(B) $\tan\theta$

(C) $\frac{1-\cos\theta}{1+\cos\theta}$

(D) $\cot\theta$

26. The value of $\frac{\cos^2 28 + \cos^2 62}{1 + \sin 31 . \sec 59}$ is :

(A) 0

(B) $\frac{1}{2}$

(C) 1

(D) $\frac{2}{3}$

27. If $5 \cos \theta = 12 \sin \theta$, then $\operatorname{cosec} \theta$ is :

(A) $\frac{5}{13}$

(B) $\frac{5}{12}$

(C) $\frac{12}{5}$

(D) $\frac{13}{5}$

28. If $\cos 3\theta = \frac{\sqrt{3}}{2}$, then the value of $\sin 6\theta$ will be :

(A) $\frac{1}{\sqrt{2}}$

(B) $\frac{1}{2}$

(C) $\frac{\sqrt{3}}{2}$

(D) 1

29. If $\operatorname{cosec}\theta - \cot\theta = \frac{1}{3}$, then the value of $\operatorname{cosec}\theta + \cot\theta$ is :

(A) 1

(B) $\sqrt{3}$

(C) 3

(D) $\frac{1}{\sqrt{3}}$

30. If ΔABC is right angled at B, then the value of $\cos(A + C)$ is :

(A) 0

(B) 1

(C) $\frac{1}{2}$

(D) $\frac{\sqrt{3}}{2}$

31. ΔABC and ΔPQR are such that $\frac{AB}{RP} = \frac{BC}{QR} = \frac{AC}{PQ}$, therefore :

(A) $\Delta ABC \sim \Delta PQR$

(B) $\Delta ABC \sim \Delta QPR$

(C) $\Delta ABC \sim \Delta PRQ$

(D) $\Delta ABC \sim \Delta QRP$

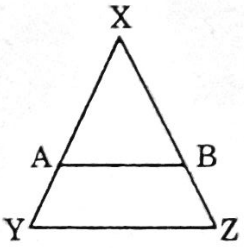
32. If $\Delta PQR \sim \Delta GEF$, $\angle P = 25°$ and $\angle G + \angle F = 100°$, then the measure of $\angle F$ is :

(A) 35°

(B) 45°

(C) 55°

(D) 75°

33. 

As in the figure, A and B are points on sides XY and XZ of ΔXYZ such that $AB \parallel YZ$. If XA = 6 cm, AY = 4 cm and XB = 14 cm, then the length of BZ is :

(A) 21 cm

(B) $\frac{28}{3}$ cm

(C) $\frac{12}{7}$ cm

(D) 6 cm

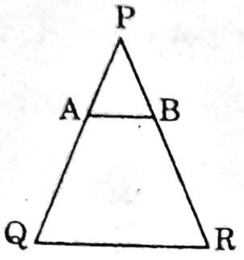
34. Given : $\Delta PQR \sim \Delta LMN$, ar(PQR) = 242 cm^2, ar(ΔLMN) = 128 cm^2 and MN = 16 cm. Therefore the length of QR is :

(A) 44 cm

(B) 30.25 cm

(C) 22 cm

(D) 5.5 cm

35. 

As in the figure, points A and B are on the sides PQ and PR of ΔPQR such that AB//QR. If PA : AQ = 1 : 3 and ar(ΔPAB) = 8 sq.cm, then the ar(□AQRB) is :

(A) 16 cm^2

(B) 64 cm^2

(C) 120 cm^2

(D) 128 cm^2

36. A boy walks 19 m due north, then 12 m due east and then 14 m south on a flat ground. How far away is he from the starting point ?

(A) $\sqrt{217}$ m

(B) 13 m

(C) $\sqrt{119}$ m

(D) 7 m

37. If in ΔEBC, $EB^2 + BC^2 = EC^2$, and $\angle E = 28°$, then what is the measure of $\angle C$?

(A) 90°

(B) 62°

(C) 28°

(D) 0°

38. Given : In ΔABC, D is a point on BC such that D lies between B and C and $\angle ADC = \angle BAC$. Therefore it can be proved that $CD \times BC$ is equal to :

(A) AB^2

(B) AD^2

(C) AC^2

(D) BD^2

39. If in ΔABC, $AD \perp BC$ and D lies between B and C, then it can be proved that :

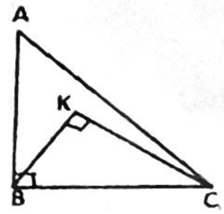
$AB^2 + DC^2$ is equal to :

(A) $AD^2 + DC^2$

(B) $AC \times BD$

(C) $AC^2 + BD^2$

(D) $AC^2 + BC^2$

40. 

K is a point in the interior of ΔABC right angled at B, such that $\angle BKC = 90°$, KC = 8 cm, BK = 6 cm and AC = 26 cm. Therefore ar(ΔABC) is :

(A) 24 cm^2

(B) 48 cm^2

(C) 120 cm^2

(D) 130 cm^2