22. If $z = np$ where n the number of trials is very large and p the probability of success at each trial, then in Poisson's probability distribution p(r) the probability of r successes is given by (1)

(A) $\frac{e^z z}{r!}$ (B) $\frac{e^{-z} z^r}{r}$

(C) $\frac{e^{-z} z^r}{r!}$ (D) $\frac{e^z z^r}{r!}$

23. In a Poisson's probability distribution if $n = 100$, $p = 0.01$, $p(r = 0)$ is given by (2)

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

(C) $\frac{3}{e}$ (D) $\frac{4}{e}$

24. In a Poisson's probability distribution if $n = 100$, $p = 0.02$, $p(r = 1)$ is given by (2)

(A) $\frac{1}{e^2}$ (B) $\frac{2}{e^2}$

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

25. For a tabular data (2)

x	0	1	2	3
F	2	4	6	8

Poisson's fit p(r) is given by

(A) $\frac{e^{-1} 2^r}{r!}$ (B) $\frac{e^{-2} 2^r}{r!}$

(C) $\frac{e^{-2} 2^3}{r!}$ (D) $\frac{e^{-3} 3^r}{r!}$

26. For a tabulated data : (2)

x	0	1	2	3
f	1	4	15	24

Poisson's fit p(r) is given by

(A) $\frac{e^{-4.609} (4.609)^r}{r!}$ (B) $\frac{e^{-6.709} (6.709)^r}{r!}$

(C) $\frac{e^{-3.509} (3.509)^r}{r!}$ (D) $\frac{e^{-2.409} (2.409)^r}{r!}$

27. In a Poisson's probability distribution if $p(r = 1) = 2p(r = 2)$ and $p(r = 3)$ is given by (2)

(A) $\frac{1}{6e}$ (B) $\frac{2}{3e}$

(C) $\frac{1}{8e}$ (D) $\frac{1}{9e}$

28. In a Poisson's probability distribution if $3p(r = 4) = p(r = 5)$ and $p(r = 6)$ is given by (2)

(A) $\frac{e^{-12}(12)^6}{6!}$ (B) $\frac{e^{-18}(18)^6}{6!}$

(C) $\frac{e^{-15}(15)^6}{6!}$ (D) $\frac{e^{-10}(10)^6}{6!}$

29. In a Poisson's probability distribution if $p(r = 2) = 9p(r = 4) + 90p(r = 6)$ then mean of the distribution is (2)

(A) ± 1 (B) ± 2

(C) ± 3 (D) ± 4

30. Number of road accidents on a highway during a month follows a Poisson distribution with mean 2. Probability that in a certain month number of accidents on the highway will be equal to 2 is (2)

(A) 0354 (B) 0.2707

(C) 0.435 (D) 0.521

31. Between 2 P.M. and 3 P.M. the average number of phone calls per minute coming into company are 2. Using Poisson's probability distribution, the probability that during one particular minute there will be no phase call at all, is given by (2)

(A) 0.354 (B) 0.356

(C) 0.135 (D) 0.457

32. Average number of phone calls per minute coming into company are 3, during certain period. These calls follows Poisson's probability distribution. Probability that during one particular minute there will be less than two calls, is given by (2)

(A) 0.299 (B) 0.333

(C) 0.444 (D) 0.199

33. In a certain factory turning out razor blades, there is a small chance of $\frac{1}{500}$ for any blade to be defective. The blades are supplied in a packets of 10. Using Poisson distribution, the probability that a packet contain one defective blade is (2)

(A) 0.0196 (B) 0.0396

(C) 0.0596 (D) 0.0496

34. The average number of misprints per page of a book is 1.5. Assuming the distribution of number of misprints to be Poisson. The probability that a particular book is free from misprints, is (2)

(A) 0.329 (B) 0.435

(C) 0.549 (D) 0.2231

35. Normal distribution curve is given by the equation $y = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$. Integral $\int_{\mu}^{\infty} y\,dx$ has the value. (1)

(A) 0.025 (B) 1

(C) 0.5 (D) 0.75

36. Normal distribution curve is given by the equation $y = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$. Integral $\int_{-\infty}^{\infty} y\,dx$ has the value (1)

(A) 0.025 (B) 1

(C) 0.5 (D) 0.75

37. X is normally distributed. The mean of X is 15 and standard deviation 3. Given that for z = 1, A = 0.3413, p (X ≥ 18) is given by (2)

(A) 0.1587 (B) 0.4231

(C) 0.2231 (D) 0.3413

38. X is normally distributed. The mean of X is 15 and standard deviation 3. Given that for z = 1, A = 0.3413, p (X ≥ 12) is given by (2)

(A) 0.6587 (B) 0.8413

(C) 0.9413 (D) 0.7083

39. X is normally distributed. The mean of X is 15 and standard deviation 3. Given that for z = 1.666, A = 0.4515, p (0 ≤ x ≤ 10) is given by (2)

(A) 0.0585 (B) 0.0673

(C) 0.0485 (D) 0.1235

40. X is normally distributed. The mean of X is 30 and variance 25. The probability p (26 ≤ x ≤ 40) is (Given : Area corresponding to z = 0.8 is 0.2881 and Area corresponding to z = 2 is 0.4772). (2)

(A) 0.8562 (B) 0.6574

(C) 0.3745 (D) 0.7653

41. In a sample of 1000 candidates, the mean of certain test is 14 and standard deviation is 2.5. Assuming Normal distribution, the probability of candidates getting less than eight marks i.e. p ($x \leq 8$) is (2)

(Given : Area corresponding to $z = 2.4$ is 0.4918)

(A) 0.0054 (B) 0.0075

(C) 0.0082 (D) 0.0035

42. In a normally distributed group of 450 students with mean 42 and standard deviation 8, the number of students scoring less than 48 marks is (2)

(Given : Area corresponding to $z = 0.75$ is 0.2734).

(A) 348 (B) 102

(C) 127 (D) 250

43. In a certain examination test 10000 students appeared in a subject of mathematics. Average marks obtained were 50% with standard deviation 5%. Marks are normally distributed. Number of students expected to get more than 60% marks is equal to (2)

($z = 2$, $A = 0.4772$)

(A) 200 (B) 300

(C) 325 (D) 228