

STATISTICS

SUBJECT 4033

PAPER 2

GENERAL COMMENT

The majority of the candidates were not prepared for this paper. More than 80% of the candidates who sat for this paper scored nothing. Very few got minimum marks. In Section A, candidates even failed to get the mode, a concept learnt at ZJC.

In Section B, almost all candidates were just copying the question as it is from the question paper, leaving that to be the solution. Some would just add and subtract figures from no source and also irrelevant to the question. For those candidates who scored minimum marks, mostly they earned part marks awarded for attempting a correct method. The 6% of the candidature are the ones who scored the minimum marks. They could have done their best to prepare for this paper but still found it difficult. Most of the questions were not even tackled by the majority.

COMMENTS ON INDIVIDUAL QUESTIONS

QUESTION 1

The few candidates who answered this paper managed to state the mode and median. Part (iii) was not attempted by most candidates.

Answer:

- (i) 6 and 6
- (ii) $\bar{x} = 6,25$ $\delta = 1,6875$
- (iii) $Q_1 = 5$ $Q_3 = 7$ $1QR = 2$

QUESTION 2

Most candidates did not know what a cumulative curve is worse alone, using the curve to find an estimate of the median and the quartiles.

Answer:

- (ii) 22 ± 1
 $Q_1 = 17 \pm 1$
 $Q_3 = 26,5 \pm 1$
- (iii) 215 students

QUESTION 3

Candidates were not able to use the sine rule or cosine rule to find the value of θ . They could not resolve correctly to find the values of p and r . Most candidates were just scribbling irrelevant information.

Answers:

- (a) $\theta = 19,1^\circ$
 (b) $p = 5,93\text{N}$ $r = 1,272\text{N}$

QUESTION 4

No one answered this question correctly. Candidates could not find the value of V and H .

Answer:

- (i) $v = 30 \text{ m/s}$
 (ii) $h = 45\text{m}$
 (iii) greatest height = 31,25
 (iv) value of $h = 20\text{m}$

QUESTION 5

Only one candidate tackled this question and scored few part marks. The candidates managed the work done against frictional resistance. Finding the average power output of the engine was equally difficult.

Answers:

- (i) 67,5 kg
 (ii) 48 KJ
 (iii) 17,5 KJ
 (iv) work done = 133 KJ
 Power output = 13,3 KW

QUESTION 6

Finding the horizontal and vertical components of velocity of projection was difficult and finding the distance OB was just difficult for the candidates. They used some figures from no source they used as speed an time.

Answers:

- (i) $V_x = 25 \text{ m/s}$ $V_y = 40 \text{ m/s}$
- (ii) Speed = $\sqrt{10^2 + 25^2} = 26,9 \text{ m/s}$
 Direction = $\tan^{-1}\left(\frac{10}{25}\right) = 21,8^\circ$
- (iii) Time = 8 seconds
- (iv) Distance = $25 \times 8 = 200 \text{ m}$.

QUESTION 7

Candidates failed to resolve forces correctly to find vertical and horizontal components.

Answers:

- (a) (i) $P = 28 \text{ N}$ (ii) $\mu = 0,45$
- (b) (i) $P = 24,5 \text{ N}$ $Q = 22,6 \text{ N}$
- (ii) Magnitude and direction of the resultant = $45,2 \text{ N}$ upwards.

QUESTION 8

Candidates found this question difficult. They were not able to use equations of motion to find the further distance travelled by the truck before resting.

Answers:

- (i) $m = 4 \text{ kg}$ (ii) $v = 3 \text{ m/s}$
- (iii) $a = \frac{4}{15} \text{ m/s}^2$ $F = 320 \text{ N}$
- (iv) $S = 1,875 \text{ m}$

QUESTION 9

This was a very difficult question that was not tackled. Resolving forces was a problem.

Answer:

- (i) Retardation $a = 5 \text{ m/s}^2$ (ii) distance $S = 6,4 \text{ m}$
- (iii) $a = \frac{35}{13} \text{ m/s}^2$

QUESTION 10

The few candidates who attempted this question scored marks here and there. The few candidates managed to find the value of P and K. The rest of the other candidates were just writing down figures from no source.

Answers:

- (a) (i) $P = 0,19$ $K = 9$
 (ii) $E(X^2) = 88,74$
 (iii) $\text{Var}(X) = 13,05$

- (b) $\text{Price Relative} = \frac{0,63}{0,42} \times 100 = 150$

QUESTION 11

Some candidates did not understand what a tree diagram is. Others managed to draw the tree diagram though it contained wrong figures. Part (b) of the question was difficult. Candidates could not use tables.

Answers:

- (a) (ii) $0,7$ (iii) $\frac{8}{15}$

- (b) $\mu = 120,19$
 $\delta = 15,09$

QUESTION 12

The few candidates who attempted this question earned some part marks. They managed part (a) only. The rest of the question was just difficult.

Answer:

- (a) (i) $p = 0,1$ $n = 12$
 (ii) $P(X=3) = 0,0852$

- (b) (i) ${}^nC_4 = 330$
 (ii) $100 + 15 = 115$

QUESTION 13

A candidate showed ability in using the normal distribution to find the confidence interval though the whole question had some difficult parts, difficult to tackle.

Answers:

- (i) $\bar{X} \sim N(200; \frac{52}{9})$
- (ii) $P(\bar{X} > 204) = 0,0082$
- (iii) $P(198 < \bar{X} < 203) = 0,0849$
- (iv) Confidence interval
(196,7 ; 203,3)

QUESTION 14

Answers:

- (i) 0,2266
- (ii) 0,2025
- (iii) $\mu = 769,74$