GUJCET- BE-2021

Test Booklet No. 1501789

Test Booklet Set No. 15

This booklet contains 32 pages.

DO NOT open this Test Booklet until you are asked to do so.

Important Instructions :

1) The Physics and Chemistry test consists of 80 questions. Each question carries 1 mark. For each correct response, the candidate will get 1 mark. For each incorrect response ¼ mark will be deducted. The maximum marks are 80.
2) This Test is of **2 hours** duration.
3) Use **Black Ball Point Pen only** for writing particulars on OMR Answer Sheet and marking answers by darkening the circle '●'.
4) Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5) **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
6) The Set No. for this Booklet is 15 . Make sure that the Set No. printed on the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7) The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet.
8) Do not write your Seat No. anywhere else, except in the specified space in the Test Booklet / Answer Sheet.
9) Use of White fluid for correction is not permissible on the Answer Sheet.
10) Each candidate must show on demand his / her Admission Card to the Invigilator.
11) No candidate, without special permission of the Superintendent or Invigilator, should leave his / her seat.
12) Use of Simple (Manual) Calculator is permissible.
13) The candidate should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and must sign the Attendance Sheet (Patrak - 01). Cases where a candidate has **not** signed the Attendance Sheet (Patrak - 01) will be deemed not to have handed over the Answer Sheet and will be dealt with as an unfair means case.
14) The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
15) No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
16) The candidates will write the Correct Test Booklet Set No. as given in the Test Booklet / Answer Sheet in the Attendance Sheet. (Patrak - 01)

BIOLOGY

1) In human, chromosome 1 has most genes _____ and the Y has the fewest genes _____, respectively.

(A) 2698, 231
(B) 2968, 213
(C) 2968, 231
(D) 2698, 213

2) In which body part of female Anopheles mosquito, gametes of parasite plasmodium fertilise and develop?

(A) Salivary gland
(B) Rectum
(C) RBC
(D) Gut

3) In cases of snakebites, the injection which is given to patients, contain preformed antibodies against the snake venom. This type of immunisation is called _____.

(A) Active immunity
(B) Both kinds of immunity
(C) Passive immunity
(D) Partial passive immunity

4) 'Contact inhibition' is the property of which cells?

(A) neoplastic cells
(B) normal cells
(C) the cells that possess oncogenes
(D) benign tumor cells

(Space for Rough Work)

5) Choose the correct option for the given columns :

Column - I (Source)	Column - II (Substance)	Column - III (Function)
(P) Trichoderma polysporum	(a) Statins	(i) clot bluster
(Q) Monascus purpureus	(b) streptokinase	(ii) organ - transplant
(R) Streptococcus	(c) cyclosporin	(iii) control of blood - cholesterol

P Q R

(A) (a - iii) (c - i) (b - ii)

(B) (b - ii) (a - i) (c - iii)

(C) (c - iii) (b - i) (a - ii)

(D) (c - ii) (a - iii) (b - i)

6) Choose the correct option, which shows correct sequence of substances obtained during sequential process of sewage treatment.

(A) Primary sludge → flocs → effluent → anaerobic sludge

(B) Primary sludge → anaerobic sludge → flocs → effluent

(C) Primary sludge → effluent → flocs → anaerobic sludge

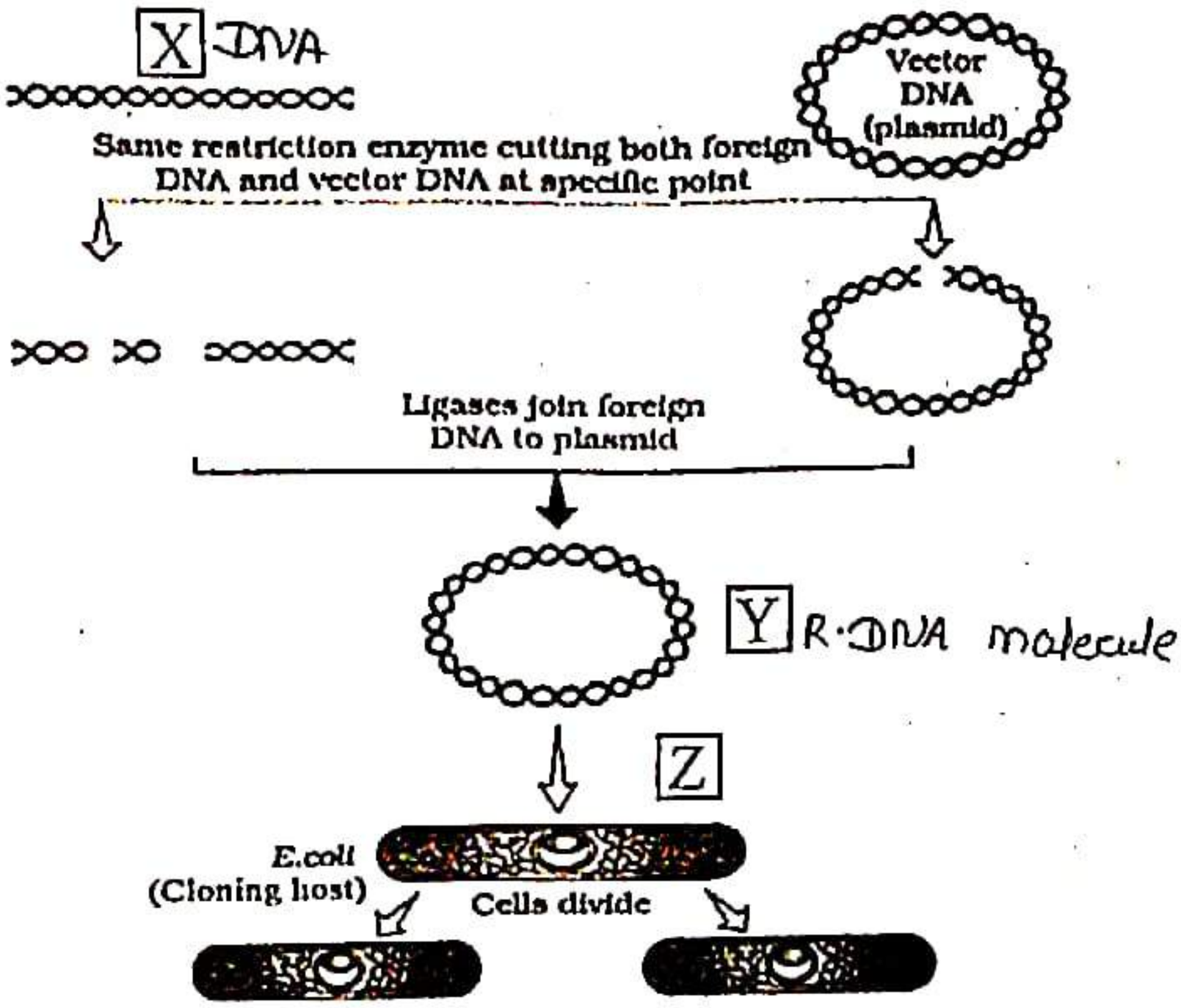
(D) Primary sludge → anaerobic sludge → effluent → flocs

(Space for Rough Work)

7) As biological - controller, Baculo viruses are pathogens to which organisms?

(A) fungi and insects
(B) insects and beetles
(C) insects and other arthropods
(D) beetles and arthropods

8) For given diagram choose the correct option for 'X', 'Y' and 'Z'.



	X	Y	Z
(A)	DNA	Recombinant DNA molecule	transformation
(B)	foreign DNA	Recombinant DNA molecule	transformation
(C)	foreign DNA	Recombinant DNA molecule	transduction
(D)	DNA	Recombinant DNA molecule	transduction

(Space for Rough Work)

9) A r-DNA is inserted within the coding sequence of an enzyme, β-galactosidase. This results into inactivation of the gene for synthesis of this enzyme, which is referred to as _____.

(A) recombinant inactivation
(B) insertional activation
(C) insertional inactivation
(D) combinational inactivation

10) Choose the correct option that represents correct sequential steps for PCR method.

(A) Denaturation → Annealing → Extension → Amplification
(B) Denaturation → Extension → Annealing → Amplification
(C) Denaturation → Annealing → Amplification → Extension
(D) Denaturation → Extension → Amplification → Annealing

11) Statement - I : ELISA is based on the principle of antigen - antibody interaction.

Statement - II : Infection by pathogen can be detected by the presence of antigens or by detecting the antibodies synthesised against the pathogens.

(A) Statements I and II both are correct
(B) Statement I is incorrect, but statement II is correct
(C) Statement I is correct, but statement II is incorrect
(D) Statements I and II both are incorrect

12) Human protein α - 1 - antitrypsin is used to treat which disease?

(A) lukemia
(B) emphysema
(C) cancer
(D) AIDS

(Space for Rough Work)

13) RNA interference takes place in all eukaryotic organisms as a method of cellular defense. This method involves silencing of a specific mRNA due to a _____ molecule.

(A) complementary ss DNA

(B) complementary ss RNA

(C) complementary ds DNA

(D) complementary ds RNA

14) Choose the correct statement for 'Allen's Rule'.

(A) Mammals from colder climates generally have longer ears and shorter limbs to minimise heat loss

(B) Mammals from colder climates generally have longer ears and longer limbs to minimise heat loss

(C) Mammals from colder climates generally have shorter ears and shorter limbs to minimise heat loss

(D) Mammals from colder climates generally have shorter ears and longer limbs to minimise heat loss

15) Logistic Growth is expressed by which of the following equation?

(A) $dN/dt = rN\left(\frac{K-N}{K}\right)$

(B) $dN/dt = rN$

(C) $N_t = N_o\, e^{rt}$

(D) $dN/dt = N\left(\frac{K-N}{K}\right)$

(Space for Rough Work)

16) Which species of plant employs 'sexual deceit' to get pollination done by a species of bee?

(A) Yucca

(B) Kigelia

(C) Commelina

(D) Mediterrancan orchid

17) 'Species - Area relationships' was given by which scientist?

(A) Allen

(B) Alexander von Humboldt

(C) Paul Ehrlick

(D) Gause

18) Amazon rain forest is being cut and cleared for cultivating which plant?

(A) barley

(B) maize

(C) sugarcane

(D) soya beans

19) Statement I : In many cultures, tracts of forest were set aside, and all the trees and wildlife within were venerated and given total protection are referred as sacred groves.

Statement II : In Meghalaya, the sacred groves are the last refuges for a large number of rare and threatened animals.

(A) Statements I and II both are correct

(B) Statement I is incorrect, but statement II is correct

(C) Statement I is correct, but statement II is incorrect

(D) Statements I and II both are incorrect

(Space for Rough Work)

20) Select the correct option showing correct sequence for the structures developed by Penicillium, Hydra and sponges for Asexual mode of reproduction.

(A) Zoospores, buds, gemmules
(B) Fragmentation, gemmules, buds
(C) Conidia, buds, gemmules
(D) Fragmentation, buds, gemmules

21) Select the correct option for seasonal breeders.

(A) monkeys, dogs
(B) dogs, sheep
(C) human, tiger
(D) human, apes

22) Match the following columns for organisms and meiocytes and choose the correct option.

Column - I (Name of the Organism)	Column - II (Meiocytes)
(P) Housefly	(i) 12
(Q) Fruit fly	(ii) 42
(R) Butterfly	(iii) 08
(S) Rat	(iv) 360

	P	Q	R	S
(A)	(i)	(iv)	(iii)	(ii)
(B)	(i)	(iii)	(iv)	(ii)
(C)	(ii)	(iii)	(iv)	(i)
(D)	(ii)	(iv)	(iii)	(i)

(Space for Rough Work)

23) Study the following statements :

I) Pollen grains of many species cause severe allergies and bronchial afflictions in some people often leading to chronic respiratory disorders.

II) Pollen grains are rich in nutrients.

III) Carrot grass that came into India as a contaminant with imported rice.

Choose the option for the correct statements :

(A) Statements I and III are correct, but statement II is incorrect

(B) All statements are incorrect

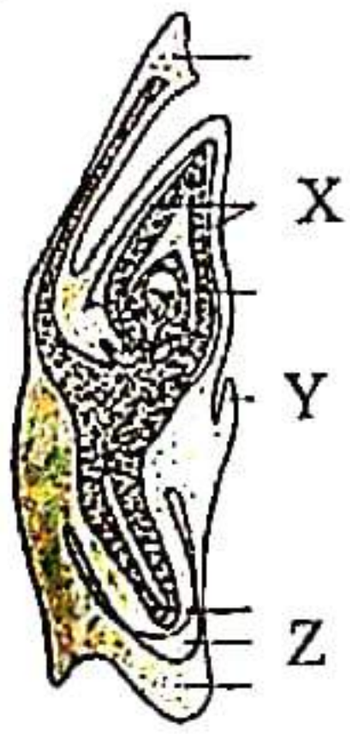
(C) Statements I and II are correct but statement III is incorrect

(D) All given statements are correct

24) What will be the respective ploidy of the cells of the nucellus, MMC (Megaspore Mother Cell), the functional megaspore and female gametophyte?

(A) 2n, n, n, n
(B) 2n, n, n, 2n
(C) 2n, 2n, n, n
(D) n, 2n, n, 2n

25) For given diagram, choose the correct labelling for 'X', 'Y' and 'Z'.



	X	Y	Z
(A)	scutellum	coleoptile	radicle
(B)	coleoptile	shoot apex	coleorhiza
(C)	shoot apex	epiblast	rootcap
(D)	coleoptile	epiblast	rootcap

(Space for Rough Work)

26) The entry of oxygen and water into the seed during germination is facilitated by _____.

(A) Integuments
(B) Micropyle
(C) Seed coat
(D) Hilum

27) The major features of embryonic development at various months of pregnancy are given below. Choose the correct option for correct sequential events.

I) The first movements of the foetus
II) The foetus develops limbs and digits
III) The embryo's heart is formed
IV) The body is covered with fine hair

(A) (II), (IV), (I), (III)
(B) (IV), (II), (I), (III)
(C) (II), (III), (IV), (I)
(D) (III), (II), (I), (IV)

28) Placenta also acts as an endocrine tissue and produces several hormones choose the correct option for it.

(A) hPL, hCG, progesterone, oxytocin
(B) hPL, hCG, estrogen, relaxin
(C) hPL, hCG, estrogen, progesterone
(D) hPL, hCG, progesterone, relaxin

29) In male, for normal fertility, X sperms must have normal shape and size and Y sperms must show vigorous motility.

	X		Y
(A)	at least 60%	,	at least 40%
(B)	maximum 60%	,	minimum 40%
(C)	at least 40%	,	at least 60%
(D)	minimum 60%	,	maximum 40%

(Space for Rough Work)

30) Which the part of oviduct, joins the uterus?

(A) Fimbriae
(B) Isthmus
(C) Ampulla
(D) Infundibulum

31) Choose the correct option for full term of PID.

(A) Pregnancy Inflammatory Disease
(B) Pelvic Inflammatory Disease
(C) Pregnancy Infection Disease
(D) Pelvic Infection Disease

32) Choose correct option for non - medicated IUDs.

(A) Lippes loop
(B) Multiload 375
(C) LNG - 20
(D) CuT

33) Select the incorrect option for ART.

(A) IUT - The embryos upto 8 blastomeres could be transferred into the fallopian tube.

(B) ICSI - A sperm is directly injected into the ovum.

(C) GIFT - Transfer of an ovum collected from a donor into the fallopian tube of another female.

(D) ZIFT - The early embryo could be transferred into the fallopian tube.

34) Which characteristic feature of Dog flower plant shows incomplete dominance?

(A) Colour of the flower
(B) Seed colour
(C) Height of the plant
(D) Seed shape

(Space for Rough Work)

35) The phenotype of one parent for skin colour is AABBCC and other parent is aabbcc. What will be the skin colour and genotype for their progeny?

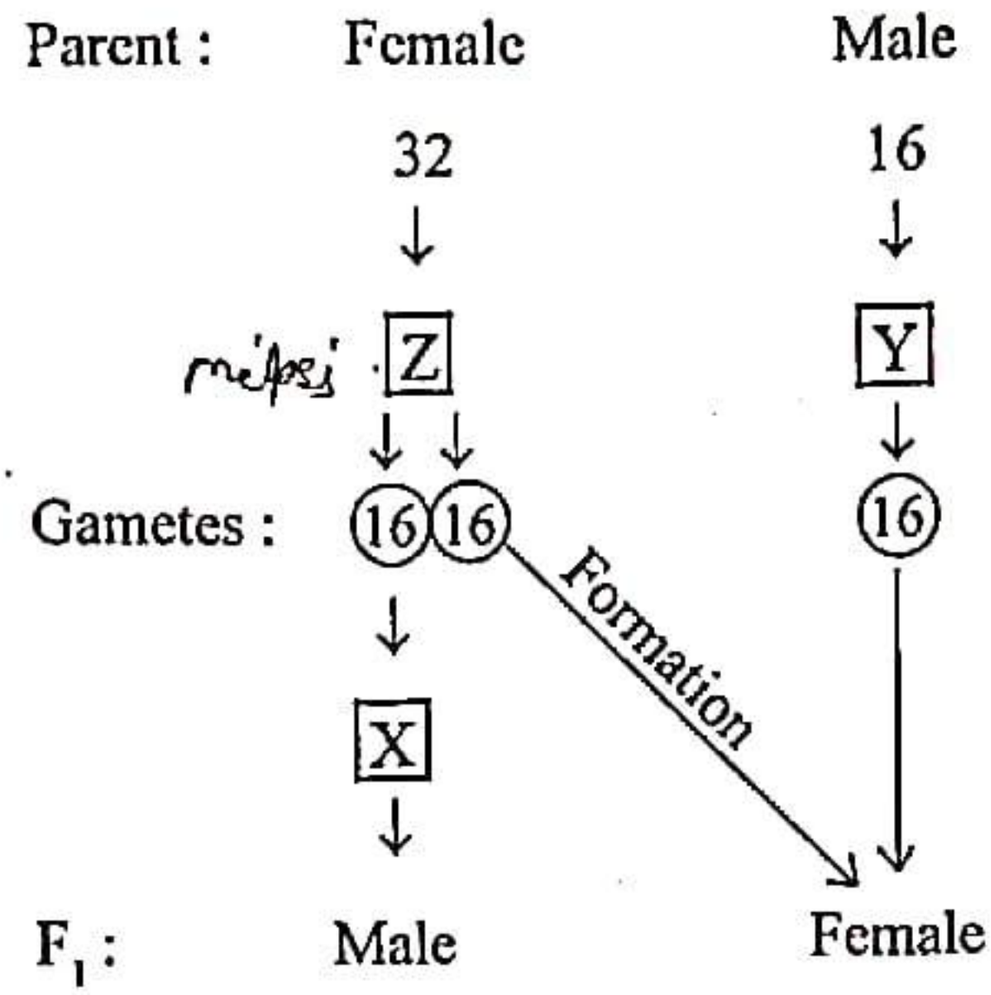
(A) darkest skin colour, AaBbCc

(B) lightest skin colour, AaBbCc

(C) intermediate skin colour, AaBbCc

(D) intermediate skin colour, AaBBCc

36) For given chart, choose correct option for 'X', 'Y' and 'Z'.



	X	Y	Z
(A)	Parthenogenesis	Mitosis	Meiosis
(B)	Mitosis	Meiosis	Parthenogenesis
(C)	Parthenogenesis	Meiosis	Mitosis
(D)	Meiosis	Mitosis	Parthenogenesis

(Space for Rough Work)

37) Linked genes HBA1 and HBA2 are located on which pair of chromosomes?

(A) 11
(B) 14
(C) 22
(D) 16

38) Study the following statements :

I) Bacteriophage lambda has 5386 base pairs (bp)
II) E. coli has 4.6×10^6 bp
III) haploid content of human DNA is 3.3×10^9 bp

Find the option for incorrect statement.

(A) Only statement I
(B) Only statement III
(C) Only statement II
(D) Statements I and II

39) Choose the correct option for conclusion of Hershey - Chase experiment.

	Experiment		Conclusion
(A)	Bacteriophage, Radioactive (^{32}S) labelled protein capsule	→	Radioactive (^{32}S) detected in cells + No Radioactivity detected in supernatant
(B)	Radioactive (^{32}P) labelled DNA	→	No Radioactive detected in cells + Radioactive detected (^{32}P) in supernatant
(C)	Bacteriophage, Radioactive (^{35}S) labelled protein capsule	→	No Radioactive (^{35}S) detected in cells + Radioactive (^{35}S) detected in supernatant
(D)	Radioactive (^{35}P) labelled DNA	→	Radioactive (^{35}P) detected in cells + No Radioactivity detected in supernatant

40) A segment of DNA coding for a polypeptide, the structural gene in a transcription unit is called _____.

(A) Cistron
(B) Octamer
(C) Nucleosome
(D) Chromatin

(Space for Rough Work)

GUJCET Biology

2021 Paper Answer Key (Eng)

BIOLOGY (ENG) SET - 15

Question No.	Answer	Question No.	Answer
1	C	21	B
2	D	22	B
3	C	23	C
4	B	24	C
5	D	25	D
6	C	26	B
7	C	27	D
8	B	28	C
9	C	29	A
10	A	30	B
11	A	31	B
12	B	32	A
13	D	33	A
14	C	34	A
15	A	35	C
16	D	36	A
17	B	37	D
18	D	38	A
19	C	39	C
20	C	40	A