

Breast Cancer

60 questions in three levels, with answer key

For NEET-PG, USMLE, DNB and DM revision and for classroom tests. Level 1 covers core facts; Level 2 tests applied reasoning (calculations, imaging and fluid findings, trial interpretation, sequencing); Level 3 covers landmark trials and newer therapies. Answers and explanations are at the end. No drug doses.

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Level 1 · Basics

Q1. Diagnosis A 32-year-old woman's mother had ovarian cancer at 46 and her maternal aunt breast cancer at 39. She asks which single gene most likely explains this family pattern.

- A CDH1
- B BRCA1
- C TP53
- D CHEK2
- E PTEN

Q2. Diagnosis A 61-year-old man has a hard, painless retroareolar lump with nipple retraction. Which statement is correct?

- A He should be offered germline genetic testing if cancer is confirmed
- B Male breast cancer is usually HER2-positive
- C Gynaecomastia is the likely diagnosis; reassure
- D Sentinel-node biopsy is contraindicated in men
- E Aromatase inhibitor alone is the preferred adjuvant endocrine therapy

Q3. Diagnosis Which statement about breast cancer in Indian women is most accurate?

- A Median age at diagnosis is similar to Western women
- B A higher proportion of tumours are triple-negative than in Western series
- C Organised mammography screening covers most women aged 50–69
- D Male breast cancer is commoner than in the West
- E Most patients present with stage I disease

Q4. Diagnosis Germline testing is LEAST justified in which newly diagnosed patient (no family history)?

- A A 58-year-old with triple-negative cancer
- B A 72-year-old with grade 1 ER-positive cancer
- C A 55-year-old eligible for a PARP inhibitor
- D A 66-year-old man
- E A 44-year-old with ER-positive cancer

Q5. Diagnosis A 40-year-old who is not breastfeeding has had the appearance shown (schematic) for 5 weeks: diffuse redness over more than a third of the breast with skin dimpling, despite antibiotics. What is the diagnosis and staging category?

- A Inflammatory breast cancer, T4d: core and skin punch biopsy, then systemic staging
- B Fat necrosis: observe
- C Lactational mastitis: change antibiotics
- D Breast abscess: incision and drainage
- E Eczema: topical steroids

Q6. Diagnosis Under India's national NCD programme (NP-NCD), breast cancer screening for women aged 30–65 is done by:

- A Biennial ultrasound
- B Monthly breast self-examination only
- C Clinical breast examination every 5 years by trained health workers
- D Annual mammography
- E Serum CA 15–3

Q7. Diagnosis A healthy 42-year-old at average risk asks whether she should start screening mammography. The best answer is:

- A Screening has no proven benefit before 50
- B Ultrasound alone is the best screening test at her age
- C Mammography every 1–2 years can be offered after discussing modest benefit and false positives
- D She should wait until menopause
- E Annual breast MRI is preferred in her 40s

- Q8. Diagnosis** A 30-year-old BRCA1 carrier with no cancer asks about screening. The most appropriate plan is:
- A Ultrasound every 5 years
 - B Clinical breast examination only
 - C Annual mammography from 40
 - D Thermography every year
 - E Annual breast MRI now, adding mammography from about 30
- Q9. Diagnosis** Which test should NOT be used as a substitute for screening mammography?
- A Digital breast tomosynthesis
 - B Thermography (heat scan)
 - C MRI in BRCA carriers
 - D Digital mammography
 - E Diagnostic mammography with ultrasound for symptoms
- Q10. Diagnosis** A tumour measuring 3.5 cm with two mobile ipsilateral level I axillary nodes and no metastases is staged as:
- A T3 N1 (stage IIIA)
 - B T1 N1 (stage IIA)
 - C T2 N1 (stage IIB)
 - D T4 N1 (stage IIIB)
 - E T2 N2 (stage IIIA)
- Q11. Diagnosis** Which feature defines T4d?
- A Satellite skin nodules only
 - B Tumour >5 cm
 - C Invasion of pectoralis major alone
 - D Inflammatory carcinoma
 - E Supraclavicular node involvement
- Q12. Diagnosis** Systemic staging scans (CT chest/abdomen/pelvis with bone scan, or PET-CT) are routinely indicated for:
- A Clinical stage I disease
 - B DCIS
 - C Clinical stage III, inflammatory cancer, or symptoms suggesting metastasis
 - D Any patient over 50
 - E All newly diagnosed patients
- Q13. Diagnosis** Which histological type characteristically loses E-cadherin and may metastasise to the peritoneum, GI tract and meninges?
- A Invasive ductal (no special type)
 - B Invasive lobular
 - C Medullary
 - D Tubular
 - E Mucinous
- Q14. Diagnosis** A tumour shows HER2 IHC 2+. The next step is:
- A Treat as HER2-negative
 - B Reflex in situ hybridisation (ISH)
 - C Treat as HER2-positive
 - D Repeat IHC after 6 months
 - E Check serum HER2
- Q15. Diagnosis** ER staining in 5% of tumour cells is best described as:
- A Equivocal; repeat in 3 months
 - B Diagnostic of lobular carcinoma
 - C ER-negative; endocrine therapy has no role
 - D ER-low positive; may behave like triple-negative disease
 - E Strongly ER-positive

- Q16. Diagnosis** Which marker predicts benefit from a PARP inhibitor in breast cancer?
- A High Ki-67
 - B ESR1 mutation
 - C Germline BRCA1/2 pathogenic variant
 - D PIK3CA mutation
 - E PD-L1 CPS ≥ 10
- Q17. Diagnosis** The schematic IHC drawing shows strong, complete, circumferential membrane staining in almost all invasive tumour cells. How is HER2 scored?
- A IHC 2+: equivocal, reflex ISH
 - B IHC 0: HER2-negative
 - C IHC 1+: HER2-low
 - D IHC 3+: HER2-positive, no ISH needed
 - E Ultralow
- Q18. Survivorship** Which follow-up investigation is recommended for an asymptomatic breast cancer survivor?
- A Annual mammography
 - B Annual CT chest/abdomen
 - C Annual CA 15-3
 - D 6-monthly PET-CT
 - E Annual bone scan
- Q19. Survivorship** A survivor on an aromatase inhibitor should routinely have:
- A Annual endometrial biopsy
 - B Baseline and periodic bone density assessment
 - C Annual brain MRI
 - D Monthly lipid profile
 - E Weekly blood counts
- Q20. Treatment** Which is an absolute or strong contraindication to breast-conserving therapy?
- A Inflammatory breast cancer
 - B Age under 40
 - C Positive axillary node
 - D Tumour of 2.5 cm
 - E Lobular histology
- Q21. Treatment** After lumpectomy for invasive ductal carcinoma, the accepted adequate margin is:
- A ≥ 2 cm
 - B 2 mm
 - C No ink on tumour
 - D ≥ 1 cm
 - E ≥ 5 mm
- Q22. Treatment** FAST-Forward established which whole-breast radiotherapy schedule as non-inferior to 3 weeks?
- A 25 fractions over 5 weeks
 - B 10 fractions over 2 weeks
 - C 5 fractions over 1 week
 - D 35 fractions over 7 weeks
 - E A single intraoperative fraction
- Q23. Treatment** Standard duration of adjuvant trastuzumab-based therapy is:
- A 6 months
 - B 2 years
 - C 1 year
 - D 3 months
 - E 5 years

- Q24. Treatment** Which drug combination must NOT be given concurrently because of cardiotoxicity?
- A Paclitaxel with trastuzumab
 - B Docetaxel with carboplatin
 - C Letrozole with ribociclib
 - D Capecitabine with radiotherapy
 - E Anthracycline with trastuzumab–pertuzumab
- Q25. Treatment** First-line therapy for HER2–positive metastatic breast cancer with an overall survival benefit (CLEOPATRA) is:
- A Trastuzumab alone
 - B T-DM1
 - C Lapatinib plus capecitabine
 - D Taxane plus trastuzumab plus pertuzumab
 - E Endocrine therapy alone

Level 2 · Applied & innovative

- Q26. Diagnosis** A 36–year-old woman, not breastfeeding, has had a red, warm, swollen breast for 6 weeks despite two courses of antibiotics. There is no fever and no discrete lump. Next best step?
- A Incision and drainage
 - B Reassurance and review in 3 months
 - C Mammography, ultrasound and core biopsy with a skin punch biopsy
 - D A third, longer course of broad-spectrum antibiotics
 - E Fine-needle aspiration cytology only
- Q27. Diagnosis** A 52–year-old has a unilateral scaly, itchy nipple rash for 3 months that has not improved with steroid creams. The most important next step is:
- A Patch testing for contact dermatitis
 - B A full-thickness biopsy of the nipple with breast imaging
 - C A topical antifungal
 - D Reassurance
 - E A stronger topical steroid
- Q28. Diagnosis** A 45–year-old has a palpable, hard, irregular 2 cm lump. Her mammogram is reported normal (dense breasts). What next?
- A Repeat mammogram in 1 year
 - B Reassure: a normal mammogram excludes cancer
 - C Tumour-marker (CA 15–3) estimation
 - D Whole-body PET-CT
 - E Ultrasound and core biopsy
- Q29. Diagnosis** A 24–year-old has a 2 cm, mobile, smooth lump that has doubled in size over 3 months. Core biopsy shows a fibroepithelial lesion with stromal overgrowth. Best management?
- A Observation
 - B Excision with a clear margin
 - C Neoadjuvant chemotherapy
 - D Tamoxifen
 - E Mastectomy with axillary dissection
- Q30. Diagnosis** The schematic H&E drawing shows small discohesive cells infiltrating in single-file lines. Which statement about this tumour type is correct?
- A It is always visible as a spiculated mass on mammography
 - B It never involves both breasts
 - C It is a benign proliferative lesion
 - D It is typically triple-negative
 - E It usually loses E-cadherin and can spread to the peritoneum, GI tract and ovaries

Q31. Diagnosis The correct sequence for a suspicious breast lump is:

- A Tumour markers, then excision
- B PET-CT, then core biopsy
- C FNAC, then mastectomy
- D Excision biopsy, then imaging
- E Imaging, then core needle biopsy, then treatment planning

Q32. Diagnosis A 56-year-old has the mammographic finding illustrated (schematic MLO view). Which BI-RADS category and next step fit best?

- A BI-RADS 0: repeat views only, no biopsy
- B BI-RADS 2: routine screening
- C BI-RADS 3: repeat mammogram in 6 months
- D BI-RADS 5: ultrasound-guided core biopsy
- E BI-RADS 1: reassure

Q33. Diagnosis A 34-year-old has a palpable lump; ultrasound (schematic) shows the appearance illustrated. Which feature is most suspicious?

- A A hypoechoic mass taller than wide with posterior acoustic shadowing
- B An anechoic mass with posterior enhancement
- C A mass with a hyperechoic fatty hilum
- D An oval, circumscribed mass parallel to the skin
- E Bilateral simple cysts

Q34. Diagnosis A 2.8 cm tumour with three mobile ipsilateral level I–II axillary nodes on ultrasound-guided biopsy and no distant metastases. What is the clinical anatomic stage?

- A cT1 N1, stage IIA
- B cT2 N3, stage IIIC
- C cT2 N1 MO, stage IIB
- D cT3 N2, stage IIIA
- E cT2 NO, stage IIA

Q35. Diagnosis HER2 IHC is 2+. Dual-probe ISH shows a HER2/CEP17 ratio of 2.4 with 5.2 HER2 signals per cell. How is the tumour classified?

- A HER2-positive (amplified)
- B Equivocal: repeat IHC
- C HER2-low
- D HER2-negative
- E Ultralow

Q36. Survivorship A 33-year-old who completed treatment for HR-positive breast cancer 2 years ago wants to become pregnant. Which statement is correct?

- A Hormonal contraception is preferred until then
- B Endocrine therapy can be paused for a planned pregnancy; recurrence did not rise in short-term data (POSITIVE trial)
- C She must wait 10 years
- D Pregnancy is absolutely contraindicated
- E Pregnancy cures the cancer

Q37. Treatment A 55-year-old with a 2 cm tumour, clinically node-negative, has 2 positive sentinel nodes after breast-conserving surgery; whole-breast radiotherapy is planned. Further axillary management?

- A No further axillary surgery
- B PET-CT before deciding
- C Completion axillary dissection
- D Mastectomy
- E Axillary dissection plus chemotherapy

Q38. Treatment A 58-year-old postmenopausal woman has a pT1c NO ER-positive, HER2-negative cancer with a 21-gene recurrence score of 14. Best adjuvant systemic therapy?

- A No systemic therapy
- B Chemotherapy alone
- C Trastuzumab
- D Chemotherapy then endocrine therapy
- E Endocrine therapy alone

Q39. Treatment A gBRCA1 carrier has residual disease after neoadjuvant chemotherapy for HER2-negative breast cancer. Which adjuvant agent improved overall survival in this setting?

- A Olaparib
- B Everolimus
- C Capecitabine
- D Bevacizumab
- E Trastuzumab

Q40. Treatment A premenopausal woman on tamoxifen develops depression. Which antidepressant should be AVOIDED because it reduces tamoxifen activation?

- A Cognitive behavioural therapy
- B Mirtazapine
- C Escitalopram at low dose
- D Venlafaxine
- E Paroxetine

Q41. Treatment A 64-year-old has new bone-only metastatic ER-positive, HER2-negative breast cancer without visceral crisis. Best first-line therapy?

- A Best supportive care only
- B Trastuzumab
- C Tamoxifen alone for 6 months
- D Combination chemotherapy
- E Aromatase inhibitor plus a CDK4/6 inhibitor

Q42. Treatment A patient with breast cancer has 2 days of new leg weakness and thoracic back pain worse at night. Most urgent action?

- A Analgesia and review in a month
- B Bone scan next week
- C Start chemotherapy immediately without imaging
- D Tumour-marker estimation
- E Dexamethasone and same-day whole-spine MRI

Q43. Treatment Surgery to the asymptomatic primary tumour in de novo metastatic breast cancer:

- A Has not shown a survival benefit and is reserved for local symptoms
- B Is mandatory before systemic therapy
- C Should be combined with axillary dissection
- D Consistently improves overall survival
- E Replaces systemic therapy

Q44. Treatment In a trial, 5-year invasive disease-free survival was 77% with a new adjuvant drug and 71% with standard therapy. Approximately how many patients need treatment to prevent one invasive recurrence or death at 5 years?

- A About 71
- B About 100
- C About 6
- D About 17
- E About 1.1

Level 3 · Challenging

- Q45. Diagnosis** A 26-year-old with a 2.5 cm HER2-positive breast cancer has a sister with osteosarcoma and a mother with adrenocortical carcinoma. Which management principle changes most?
- A Trastuzumab is contraindicated
 - B Annual mammography from age 20 is sufficient surveillance
 - C She should receive only neoadjuvant endocrine therapy
 - D Radiotherapy should be avoided where possible, favouring mastectomy
 - E She needs no genetic testing because she is HER2-positive
- Q46. Diagnosis** A 50-year-old has an axillary node showing adenocarcinoma; examination, mammography and ultrasound of both breasts are normal. Which is the most useful next investigation?
- A Upper GI endoscopy
 - B Breast MRI
 - C Colonoscopy
 - D CA-125
 - E Bone marrow biopsy
- Q47. Diagnosis** Axillary level II nodes are located:
- A Along the internal mammary vessels
 - B Behind pectoralis minor
 - C Lateral to pectoralis minor
 - D Above the clavicle
 - E Medial to pectoralis minor (infraclavicular)
- Q48. Diagnosis** A patient with metastatic HR-positive cancer has HER2 IHC 1+ (ISH not amplified) and has progressed on endocrine therapy. Which drug becomes an option specifically because of this HER2 result?
- A Pertuzumab
 - B Lapatinib
 - C Tucatinib
 - D Trastuzumab
 - E Trastuzumab deruxtecan
- Q49. Diagnosis** After progression on an aromatase inhibitor plus a CDK4/6 inhibitor, ctDNA shows an ESR1 mutation. The most rational next endocrine option is:
- A An oral SERD such as elacestrant
 - B Switch to a different aromatase inhibitor
 - C Stop endocrine therapy permanently
 - D Megestrol only
 - E Re-challenge with tamoxifen first
- Q50. Survivorship** Which recurrence pattern is characteristic of HR-positive breast cancer compared with TNBC?
- A Early peak at 1–3 years then very low risk
 - B No bone involvement
 - C Recurrence only in the first year
 - D Persistent risk extending beyond 10–20 years
 - E Predominantly brain-only relapse
- Q51. Treatment** A woman with biopsy-proven N1 disease becomes clinically node-negative after neoadjuvant chemotherapy. The preferred axillary operation is:
- A Axillary dissection in all cases
 - B Sentinel-node biopsy with dual tracer plus removal of the clipped node
 - C No axillary surgery
 - D Axillary radiotherapy alone without surgery
 - E Level III clearance

- Q52. Treatment** For a left-sided breast cancer requiring radiotherapy, which technique most reduces cardiac dose for the majority of patients?
- A Proton therapy for all
 - B Omitting radiotherapy
 - C Prone positioning in all patients
 - D Adding a tumour-bed boost
 - E Deep-inspiration breath-hold with modern photon planning
- Q53. Treatment** Omission of radiotherapy after breast-conserving surgery is most reasonable for:
- A A 74-year-old with 1.4 cm grade 1 ER-positive, node-negative cancer taking endocrine therapy
 - B A 50-year-old with 2 positive nodes
 - C A 38-year-old with grade 3 TNBC
 - D Any patient with clear margins
 - E Inflammatory cancer after pCR
- Q54. Treatment** Two positive sentinel nodes are found at breast-conserving surgery for a cT1 NO tumour; whole-breast radiotherapy is planned. Which trial supports omitting axillary dissection?
- A SOFT
 - B NSABP B-O6
 - C CLEOPATRA
 - D ACOSOG Z0011
 - E KATHERINE
- Q55. Treatment** A 46-year-old premenopausal woman has ER-positive cancer with 2 positive nodes and a recurrence score of 18. Which statement reflects RxPONDER?
- A Genomic scores cannot be used with positive nodes
 - B She should receive only tamoxifen for 2 years
 - C She needs trastuzumab
 - D Chemotherapy shows no benefit regardless of menopausal status
 - E Premenopausal women derived benefit from chemotherapy; ovarian suppression is the debated alternative
- Q56. Treatment** After neoadjuvant chemotherapy with trastuzumab and pertuzumab, a patient has residual invasive disease in the breast only (nodes negative). Preferred adjuvant HER2 therapy?
- A Capecitabine
 - B T-DM1 (trastuzumab emtansine)
 - C Continue trastuzumab and pertuzumab
 - D Lapatinib
 - E Stop HER2 therapy
- Q57. Treatment** Abemaciclib for 2 years with endocrine therapy (monarchE) is indicated for high-risk HR+/HER2- early breast cancer. Which patient meets the monarchE high-risk definition?
- A DCIS
 - B Node-negative, recurrence score 30
 - C 1 positive node, tumour 2 cm, grade 2, Ki-67 10%
 - D 4 or more positive nodes
 - E T1 NO, grade 3
- Q58. Treatment** A HER2-positive patient has progressive brain metastases on trastuzumab-based therapy. Which oral agent added to trastuzumab and capecitabine improved survival including in brain metastases?
- A Palbociclib
 - B Tucatinib
 - C Everolimus
 - D Neratinib
 - E Lapatinib

Q59. **Treatment** In metastatic triple-negative breast cancer with PD-L1 CPS ≥ 10 , which first-line approach is supported by randomised data?

- A** Surgery of the primary tumour
- B** Olaparib for all patients
- C** Endocrine therapy
- D** Pembrolizumab plus chemotherapy, or pembrolizumab plus sacituzumab govitecan
- E** Trastuzumab plus chemotherapy

Q60. **Treatment** A 47-year-old premenopausal woman has pT1c NO ER+/HER2- cancer with a 21-gene recurrence score of 21. What does TAILORx suggest about chemotherapy?

- A** Use trastuzumab
- B** Recurrence score is not valid in node-negative disease
- C** A small chemotherapy benefit is possible at age ≤ 50 with RS 16–25; discuss chemotherapy or ovarian suppression with endocrine therapy
- D** No chemotherapy benefit at any age with RS 21
- E** Chemotherapy is mandatory regardless of age

Answer key

1-B 2-A 3-B 4-B 5-A 6-C 7-C 8-E 9-B 10-C 11-D 12-C 13-B 14-B 15-D 16-C 17-D 18-A 19-B 20-A 21-C
22-C 23-C 24-E 25-D 26-C 27-B 28-E 29-B 30-E 31-E 32-D 33-A 34-C 35-A 36-B 37-A 38-E 39-A 40-E
41-E 42-E 43-A 44-D 45-D 46-B 47-B 48-E 49-A 50-D 51-B 52-E 53-A 54-D 55-E 56-B 57-D 58-B 59-D
60-C

Explanations

Q1 · B Early-onset breast plus ovarian cancer on the same side of the family is the classic BRCA1/2 pattern; BRCA1 carries the higher ovarian risk. CHEK2 is a moderate-risk breast gene, PTEN (Cowden) adds thyroid and endometrial cancer, CDH1 links lobular breast with diffuse gastric cancer, and TP53 causes very early breast cancer with sarcomas and brain tumours.

Q2 · A An eccentric or hard, fixed, nipple-involving mass needs triple assessment. Every man with breast cancer should be offered germline testing (BRCA2 above all). Most male cancers are ER-positive; tamoxifen is preferred, and an AI is used only with a GnRH agonist. Sentinel-node biopsy is used as in women.

Q3 · B Indian patients present about a decade younger, often with locally advanced disease, and triple-negative cancers make up a larger share (about a quarter in many series). There is no organised mammography programme; the national programme uses clinical breast examination for women aged 30–65.

Q4 · B Testing is indicated at ≤ 50 (ASCO-SSO extends this to ≤ 65), for TNBC at ≤ 60 , for any man, for PARP-inhibitor eligibility and for strong family history. An older woman with low-grade ER-positive cancer and no family history meets none of these.

Q5 · A Rapid diffuse erythema and oedema (peau d'orange) over $\geq \frac{1}{3}$ of the breast is inflammatory carcinoma (T4d, at least stage III). Treatment is neoadjuvant systemic therapy, modified radical mastectomy and radiotherapy.

Q6 · C The programme offers clinical breast examination every 5 years at Ayushman Arogya Mandirs. The Mumbai cluster randomised trial showed 2-yearly CBE downstaged cancers and reduced breast cancer mortality by nearly 30% in women ≥ 50 .

Q7 · C Trials show a 15–20% relative fall in breast cancer mortality at 40–69, with a smaller absolute benefit in the 40s and more false positives. Shared decision-making is recommended at 40–49; routine screening at 50–74.

Q8 · E High-risk carriers need annual MRI (typically from 25) plus mammography (typically from 30), and a discussion of risk-reducing mastectomy and salpingo-oophorectomy.

Q9 · B Thermography has poor sensitivity and specificity; the FDA has warned (2011, 2023) that it does not replace mammography. Tomosynthesis is an accepted screening tool.

Q10 · C T2 is > 2 –5 cm; movable ipsilateral level I–II nodes are N1. T2N1M0 is anatomic stage IIB.

Q11 · D T4d is inflammatory carcinoma. T4a is chest-wall invasion (not pectoralis alone), T4b skin ulceration, satellite nodules or oedema, and T4c both. Supraclavicular nodes are N3.

Q12 · C In asymptomatic stage I–II disease the yield is low and false positives are common. Imaging is indicated for stage III, inflammatory cancer, or symptoms or abnormal labs.

Q13 · B Invasive lobular carcinoma (5–10%) lacks E-cadherin, is often multicentric or bilateral, relapses late and spreads to unusual sites; it can mimic a GI or ovarian primary.

Q14 · B IHC 2+ is equivocal and needs ISH. IHC 3+ is positive; ISH-positive is a HER2/CEP17 ratio ≥ 2.0 with ≥ 4 copies per cell.

Q15 · D ER $\geq 1\%$ is positive, but ER-low (1–10%) tumours often behave like TNBC; this matters for chemotherapy and immunotherapy decisions.

Q16 · C PARP inhibitors exploit defective homologous recombination (synthetic lethality) in gBRCA carriers: adjuvant olaparib (Olympia) and metastatic olaparib or talazoparib.

Q17 · D ASCO/CAP: complete, intense circumferential membrane staining in $> 10\%$ of invasive cells is 3+ (positive). Incomplete faint staining is 1+; weak-moderate complete staining 2+ needs ISH.

- Q18 · A** Yearly mammography plus history and examination is the standard. Randomised trials (GIVIO, Rosselli Del Turco) found no survival benefit from intensive imaging or blood tests in asymptomatic patients.
- Q19 · B** Aromatase inhibitors cause bone loss; DXA at baseline and every 1–2 years, calcium, vitamin D, exercise and antiresorptive therapy when indicated. Tamoxifen users should report vaginal bleeding (endometrial risk).
- Q20 · A** Inflammatory cancer requires modified radical mastectomy even after a good response. Others include multicentric disease, diffuse suspicious calcifications, persistently positive margins and inability to receive radiotherapy.
- Q21 · C** For invasive cancer treated with breast conservation and radiotherapy, “no ink on tumour” is adequate; wider margins do not lower recurrence. For pure DCIS, 2 mm is preferred.
- Q22 · C** Five daily fractions over 1 week was non-inferior for local control with similar late effects at 5 years. India's HYPOT-Adjuvant trial is testing 1 week including nodal radiotherapy.
- Q23 · C** One year of HER2-directed therapy is standard (HERA). Shorter durations were less effective or not consistently non-inferior.
- Q24 · E** Concurrent anthracyclines with HER2 antibodies raised heart-failure rates. Anthracycline-free (taxane–carboplatin) HER2 regimens are favoured (TRAIN-2), and cardiac function is monitored throughout.
- Q25 · D** CLEOPATRA showed a large overall survival gain with pertuzumab added to trastuzumab and docetaxel. Trastuzumab deruxtecan is the second-line standard (DESTINY-Breast03).
- Q26 · C** Non-resolving “mastitis” outside lactation is inflammatory breast cancer until proven otherwise. Tissue (core plus full-thickness skin punch, looking for dermal lymphatic invasion) is needed, followed by full staging.
- Q27 · B** Persistent one-sided nipple eczema suggests Paget disease of the nipple, often associated with underlying DCIS or invasive cancer. Biopsy plus mammography/ultrasound is required.
- Q28 · E** About 10–15% of palpable cancers are mammographically occult, especially in dense breasts and lobular cancers. A clinically suspicious lump needs ultrasound and core biopsy regardless of the mammogram.
- Q29 · B** Rapid growth and stromal overgrowth suggest a phyllodes tumour rather than a fibroadenoma. Treatment is excision with a margin; axillary surgery is not needed because phyllodes tumours rarely spread to nodes.
- Q30 · E** Invasive lobular carcinoma (single-file pattern, E-cadherin loss) is usually ER-positive, more often multicentric or bilateral, can be mammographically subtle, and metastasises to unusual sites.
- Q31 · E** Triple assessment (clinical examination, imaging, core biopsy) should precede any surgery. Excision before imaging and core biopsy compromises staging, receptor-guided neoadjuvant therapy and breast conservation.
- Q32 · D** An irregular spiculated mass with fine pleomorphic calcifications is highly suggestive of malignancy (BI-RADS 5): image-guided core biopsy with receptor testing, before any surgery.
- Q33 · A** Taller-than-wide orientation, irregular or angular margins and posterior shadowing are malignant features (BI-RADS 4–5). Oval, parallel, circumscribed masses suggest fibroadenoma; anechoic with enhancement, a simple cyst.
- Q34 · C** 2–5 cm is T2; movable level I–II nodes are cN1; T2 N1 is stage IIB (anatomic).
- Q35 · A** Ratio ≥ 2.0 with ≥ 4.0 signals per cell is ASCO/CAP group 1: amplified, HER2-positive, eligible for HER2-directed therapy.
- Q36 · B** The POSITIVE trial supports a planned interruption of endocrine therapy to attempt pregnancy, resuming afterwards. Non-hormonal contraception (e.g., a copper IUD) is advised until then.
- Q37 · A** ACOSOG Z0011 showed no survival benefit from completion dissection with 1–2 positive sentinel nodes when whole-breast radiotherapy is given; AMAROS supports axillary radiotherapy as an alternative.
- Q38 · E** TAILORx: with a score ≤ 25 in women over 50 (and ≤ 15 at any age), chemotherapy adds no benefit. An aromatase inhibitor is preferred after menopause.
- Q39 · A** OlympiA showed 1 year of olaparib improved invasive disease-free and overall survival in high-risk gBRCA carriers with HER2-negative disease. Capecitabine (CREATE-X) is the alternative in TNBC without a BRCA variant.
- Q40 · E** Strong CYP2D6 inhibitors (paroxetine, fluoxetine) block conversion of tamoxifen to endoxifen. Venlafaxine is preferred; gabapentin is a non-hormonal option for hot flushes.
- Q41 · E** Endocrine therapy plus a CDK4/6 inhibitor improves PFS, with an overall survival benefit for ribociclib (MONALEESA-2). Chemotherapy first is reserved for visceral crisis.

- Q42 · E** Suspected metastatic spinal cord compression is an emergency: steroids, urgent MRI of the whole spine, and same-day spinal surgery and radiotherapy opinion. Neurological outcome depends on function at the start of treatment.
- Q43 · A** Randomised trials have not shown a consistent survival benefit; systemic therapy is the mainstay, with local treatment for fungation, bleeding or pain.
- Q44 · D** Absolute difference = 6 percentage points; number needed to treat = $1/0.06 \approx 17$. Weigh this against toxicity and cost, and look for an overall-survival effect.
- Q45 · D** The family history suggests Li-Fraumeni (TP53). Radiation increases second malignancies in TP53 carriers, so mastectomy is favoured to avoid radiotherapy where possible. HER2-positive tumours are common in TP53 carriers and trastuzumab is used as usual. Surveillance relies on MRI, not mammography.
- Q46 · B** Isolated axillary adenocarcinoma in a woman is occult breast cancer until proven otherwise. MRI finds the primary in most cases; ER/PR/HER2 and GATA3 on the node support a breast origin.
- Q47 · B** Levels are defined by pectoralis minor: I lateral/inferior, II behind, III medial (infraclavicular). Level III involvement is N3.
- Q48 · E** HER2-low (IHC 1+ or 2+/ISH-) and ultralow tumours do not benefit from classic HER2 blockade, but trastuzumab deruxtecan improved outcomes (DESTINY-Breast04 and -06).
- Q49 · A** ESR1 mutations arise under AI pressure and cause ligand-independent ER activity. Oral SERDs (elacestrant, EMERALD) degrade ER and work in ESR1-mutant disease.
- Q50 · D** HR-positive cancers relapse steadily for 20+ years (often bone first), supporting extended endocrine therapy and long follow-up. TNBC and HER2-positive cancers relapse mostly within 3–5 years.
- Q51 · B** Targeted axillary dissection (sentinel nodes plus the clipped node, dual tracer) keeps the false-negative rate acceptable. Any residual nodal disease (ypN+) leads to axillary dissection.
- Q52 · E** Breath-hold moves the heart down and away from the field; with IMRT/VMAT and image guidance it keeps heart dose low for most patients. Protons are reserved for when photon constraints cannot be met.
- Q53 · A** PRIME II and CALGB 9343 showed higher local recurrence but no survival difference when radiotherapy was omitted in older women with small, low-risk, HR-positive, node-negative cancers on endocrine therapy.
- Q54 · D** Z0011 showed no survival difference without axillary dissection in women with 1–2 positive sentinel nodes having breast conservation and whole-breast radiotherapy.
- Q55 · E** In 1–3 node disease with score ≤ 25 , postmenopausal women gained nothing from chemotherapy, but premenopausal women did; part of the benefit may reflect chemotherapy-induced ovarian suppression.
- Q56 · B** KATHERINE: T-DM1 reduced recurrence and improved survival versus trastuzumab for residual disease. For residual nodal disease or initially inoperable cancer, trastuzumab deruxtecan is now preferred (DESTINY-Breast05).
- Q57 · D** High risk was ≥ 4 positive nodes, or 1–3 nodes with grade 3, tumour ≥ 5 cm, or Ki-67 $\geq 20\%$. Ribociclib (NATALEE) has broader stage II–III eligibility.
- Q58 · B** HER2CLIMB showed tucatinib with trastuzumab and capecitabine improved PFS and OS, including in active brain metastases. Trastuzumab deruxtecan also has intracranial activity.
- Q59 · D** KEYNOTE-355 showed benefit for pembrolizumab with chemotherapy at CPS ≥ 10 , and ASCENT-04 favoured pembrolizumab with sacituzumab govitecan. PARP inhibitors are for gBRCA carriers.
- Q60 · C** In TAILORx, women aged ≤ 50 with RS 16–25 had some benefit from chemotherapy, possibly via ovarian suppression; options include chemotherapy or ovarian function suppression with endocrine therapy.